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IN HIS first message to Congress, President Roosevelt has made more secure the spirit of confidence which followed his brief address at Buffalo upon his succession to the presidency. His utterances are conservative upon each subject treated in his message, yet there is a strength and force about them entirely characteristic of the man. The President, of course, can only recommend, but Congress is not apt to outline any plans of legislation strongly at variance with the Executive's wishes. The general advance in securities, which followed the reading of the message, was a tribute to the President's conservatism. He speaks wisely when he advises against a general tariff revision, and no less wisely when he speaks for the extension of our foreign trade and the building up of our merchant marine.

One feature of this message stands out in strong contrast with those of most of the President's recent predecessors. It is a contribution to literature. Its language is strong, at times beautiful, and will compare favorably in style, as in other points of excellence, with any state paper in our history.

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NOVEMBER dividend payments by 56 companies identified with the mining and metallurgical industry of the United States, aggregated $12,584,294. According to reports received by the ENGINEERING AND MINING JOURNAL, 36 precious and semi-precious metal mines paid $1,825,329, or 14.5 per cent, of the total, while the balance of $10,758,965, or 85.5 per cent, was contributed by 20 allied industrial companies. Large disbursements have also been made by numerous private and close corporations, such as the properties controlled by Senator W. A. Clark, of Montana, and the Phelps-Dodge interests, that do not report. The largest payment during the month was $8,929,049 on the preferred stock of the United States Steel Corporation.

The metal mine disbursements were: Copper (4), $850,009; gold, silver and lead (30), $952,843; zinc (2), $22,477; total, $1,825,329.

The industrial payments were: Iron and steel (4), $9,923,674; coal and coke (2), $504,681; petroleum and natural gas (12), $119,110; chemical and mineral companies (2), $211,500; total, $10,758,965.

In the 11 months ending November 30, the dividends reported by 215 companies aggregated over $145,000,000, a most excellent showing.

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THE MEXICAN TRIP OF THE INSTITUTE

In this issue is given the closing chapter of the report of the trip of the American Institute of Mining Engineers through Mexico. This is supplementary to the full accounts of the proceedings given in the special souvenir number of November 30. The JOURNAL has been glad to give this meeting of the Institute unusual prominence, both in its news and editorial columns. We believe that it is certain to exercise a wide and beneficent influence. It has done a great deal towards cementing more strongly the cordial relations which already exist between the two great republics. Through the publication of the papers presented at the sessions, a better knowledge of the mineral resources of Mexico will be spread abroad, and we may expect to hear of even greater activity and development in the near future than has been observed in the recent past. This will mainly be accomplished through American capital, of which a large amount is already invested in Mexico. The mining laws of Mexico are better than ours, and capital placed there is not subjected to such extra hazardous risks as those developed through our much condemned "apex" law, enacted by, and for the benefit of the legal fraternity. The boundless hospitality extended to the visitors by the mining community, and the extraordinary official recognition given to the party, indicate that the importance of this meeting was realized throughout the republic. The impression created by this party of men and women identified with scientific and technical researches was quite different from that produced by the usual Mexican tourists. THE ENGINEERING AND MINING JOURNAL has made arrangements for a full news service in all the important mining districts of Mexico, so that its readers will be able to keep in touch with the development.

One important feature has been expedited by the trip—the substitution of American mining machinery and appliances for the peon labor which now prevails. There are many interesting problems to be worked out on these lines, which the visit of the Institute will go a long way towards solving.

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MARKET CONDITIONS

The general conditions show little change this week. Gold exports have been resumed, some $2,000,000 going to France and Germany in the middle of the week. As we have heretofore explained, these shipments have very little effect on business.

In the metal markets copper has been the subject of all sorts of rumors, most of them originating in Wall street and intended to affect the quotations of copper stocks. That they are not based on any substantial facts is shown by the but slightly changed condition of the market. The fall in standard copper in London has been made the most of, but it really amounts to little. The speculative transactions there have not been large, and standard bars are no longer the test of the market. Refined copper shows little change.

In the other metals there is but little new. Tin is still uncertain, but the pressure for spot tin has been somewhat relieved. Silver has recovered a little from the extreme depression of last week, and buying for India has improved.

The iron markets are still extremely active, demand remaining strong, while production is at a high level. The car supply continues a weak point, some furnaces and mills having difficulty in obtaining fuel and raw materials.

The anthracite coal trade shows no change, the market steadily absorbing all of the large production of coal. Car supply continues to be the difficulty, the companies being unable to deliver coal as fast as it is wanted. The trade to coast points has been affected by cold and stormy weather delaying vessels. In the seaboard bituminous trade the conditions are precisely the same as with anthracite.

The Western coal trade now rests largely with the railroads, which seem to be unable to handle the business urged upon them with any degree of promptness. The trade is just now mainly a question of getting cars enough. The closing of lake navigation by the early cold weather will still further complicate the question, as the railroads will be called on before long to move to the Northwest the coal left on the lower lake docks.

⚒

INTERNAL IMPROVEMENTS AT NATIONAL EXPENSE

The President's discussion of the subject of irrigation shows clearly his personal familiarity with the conditions and needs of the vast semi-arid (or irrigable) areas of the West. But his advocacy of the construction, at the expense of the Federal Government, of the expensive reservoirs, etc., required for this great improvement, opens an entirely new chapter in the history of the question—once a "burning" question—of "internal improvements." The old partisan controversy over this question, in which the

Whigs advocated, and their adversaries opposed, the expenditure of money by the Nation for such improvements, has passed away, almost beyond the memory of the present generation; and vast sums have been appropriated by Congress, during the last fiftv years, for geological and topographical surveys, the improvement of rivers and harbors, and even for the preliminary surveys of proposed artificial internal water-ways.

Thus far, if we are not mistaken, there has been in all such cases a plausible reason for the Congressional appropriation, in the assertion that the proposed improvement would increase the value of the national public lands, or preserve or improve, as a part of the national facilities for commerce or defense, the navigable waters of the Republic. The President's proposal concerning irrigation seems to involve a new departure in this field, and to open the door to unlimited expenditure hereafter. Of this danger he is evidently aware; and, no doubt, so far as he is concerned, it will be conscientiously encountered and resisted.

Without discussing the matter generally, we wish to point out two changes in the present system of dealing with propositions for internal improvements, which, we think, would remove a good deal of the difficulty and legislative "log-rolling" now attending this matter, and abundantly evidenced in our "river and harbor" bills.

Under the existing law a proposed improvement must be first referred, for examination and report, to the United States engineer in charge of the district concerned, whose duty it is to report on the feasibility, cost, advantage to commerce, etc., and the consequent advisability of the proposed measure. His report is transmitted through his superior officers, usually without special comment, to Congress. If it be unfavorable, the project is probably killed for the time. If it be favorable, the friends of the project are free to get an appropriation for it, if they can. But the opinion of the local engineer may depend upon his temperament and standard. One may good-naturedly recommend a scheme which another would, in stricter judgment, condemn. And, in any case, the final decision as to "advisability" has to be yes or no. There is no provision in the law for a middle course.

1. To obviate the danger of possible injustice, either way, due to the "personal equation" of the investigating engineer, we think that all such projects should be passed upon, before the legislative appropriation of money for their execution, by a single board of engineers, which could examine and weigh the preliminary reports of all local investigators according to a common standard of the national importance and need of the works projected.

2. This board should be authorized to classify such schemes under three heads, instead of two, namely:

a. Those which so largely and directly affect national commerce and defence that the National Government may properly undertake, execute, and wholly pay for them.

b. Those which are of no national importance whatever, but would simply benefit private interests, either directly, by adding value to private property, or indirectly, by spending public money in a given locality.

c. Those which do involve some actual or conceivable national benefit, though not enough to justify their execution wholly at governmental expense, but which would unquestionably be advantageous to private interests.

Under this third head, the board above suggested should be authorized to recommend that, upon the payment by the local beneficiaries—whether States, municipalities or individuals—of a certain proportion of the cost, the proposed works should be executed, and the remainder of the cost paid, by the National Government.

In this category would be classed not a few schemes which have been heretofore rejected, and not a few which have been accepted and pursued by the Government at large expense, with resulting benefit to local interests or individuals only. It may be difficult to decide in advance the amount to be supplied by such parties. But that difficulty is not so important as it seems. We are safe in saying, upon excellent expert authority, that an immense number of the ridiculous small items which, in past years, have swelled our river-and-harbor bills to appalling totals, would never have been "log-rolled" through Congress, if their contrivers had been required to put up 5 per cent of the sums which they sought to obtain from the national treasury.

Not improbably such a classification as we have suggested would have an important bearing upon the President's proposed plan of national irrigation works. Certainly it would be pertinent to inquire, as to every suggested reservoir or ditch, how much of the territory to be benefited was already private property, and how much still belonged to the public domain, to be increased in value and consequent market-price by the outlay demanded of the Government. Nor would it be unjust to stipulate that local interests should pay a fair proportion of the expenditure which would thus specially advantage them.

Without some such safeguard, it seems to us that the President's plan would result in legislative conditions which he would be the last to invite or approve.

⚒

THE HYDRAULIC MINING QUESTION IN CALIFORNIA.

An important mining case will be tried in San Francisco, on December 9, involving, as it does, the right of a miner to continue to hydraulic under a legal permit and license from the California Debris Commission when private contestants consider his restraining works insufficient to prevent debris from the mine entering the river. Practically the constitutionality of the Camminetti law is involved in this suit, which is against the Polar Star Mine, Dutch Flat, Placer County, owned by Wm. Nichols, Jr. He obtained leave to mine by hydraulic process from the California Debris Commission after the dam and impounding or restraining works for debris had been passed upon and approved by tne engineers of the commission. Now the watchman and officers of the Anti-Debris Association charge that the restraining works are insufficient to keep the debris from entering the river. When the American Institute of Mining Engineers made its visit to California two years since, it went to this mine to see the operation of hydraulic mining practically carried on.

The question involved in this suit is a very important one to all hydraulic miners in California. Heretofore, since the passage of the Camminetti act, a license to mine after plans for impounding works for the debris or tailings were approved by the California Debris Commission, was supposed to give absolute rights to mine by hydraulic process, free from all interference from any one except the commission itself.

It seems now, however, that the Anti-Debris Association formally questions the right of the licensed miners when in its opinion the debris is not properly impounded and some escapes into the river. Practically, therefore, they challenge the right of the California Debris Commission to grant an indisputable permit to mine by hydraulic process, and thus attack the act of Congress under which the commission was appointed and given the powers which it has been exercising.

In the earlier days of California, hydraulic mining was carried on without any restriction whatever, and the business grew to large proportions, the gross yield of this class of mines in the State running yearly from $5,000,000 to $8,000,000. As a result of their operations vast masses of debris or tailings were carried by the winter rains from the torrential streams and ravines into the navigable rivers and caused more or less injury to the farming lands along the banks. This brought about considerable litigation, which lasted for years, and arrayed the valley farmers against the miners of the mountains in a very bitter controversy. Finally on an important test case against the North Bloomfield Mining Company of Nevada County—the largest hydraulic mine in the world—the miners were defeated, it being decided that they must not carry on their operations to the injury of individuals on the navigable streams. The result of this decision was to close down all the hydraulic mines in the drainage basins of the Sacramento and San Joaquin valleys, and they remained practically closed for upwards of ten years, only a little illicit hydraulic mining being carried on.

This decision rendered useless mining and ditch investments valued at upward of $100,000,000. It threw some thousands of men out of employment and depopulated numbers of small mining towns in the mountain and foothill counties of the State.

After a long period of inactivity, finally some nine or ten years since, the California Miners' Association was organized, with the object of resuscitating hydraulic mining if possible. The Anti-Debris Association, composed of men in certain of the valley counties, and which had continued its fight against hydraulic mining, professed that it had no objection to this class of mining, provided the debris could be controlled and kept back out of the rivers and away from the farming lands. A sort of compromise was effected, and after considerable labor on the part of the Miners' Association, the Camminetti Act was passed by Congress, and became a law.

Under this law the President of the United States was authorized to appoint a board consisting of three officers of the Corps of Engineers, of the United States army, who should constitute the California Debris Commission, this commission being empowered by the same act to grant licenses to mine by the hydraulic process when, in its opinion, the debris could be properly impounded and prevented from entering the streams.

The mode of procedure of the commission is about as follows: When a miner or company desires to mine by hydraulic process, application is made to the commission and plans for impounding works submitted. A member of the commission, or deputy engineer, visits the mine in person and makes a report to the commission. A date of public hearing is then set and advertised, and any one objecting to the granting of the license may appear and state his reasons. These matters are all considered by the commission, and the plans for impounding works examined. These must be to the satisfaction of the commission, who change them if they wish. If it is found that mining may be carried on without any injury being done to rivers or farms, a license to mine is granted. Otherwise not, and it is illegal to thus mine without one.

When operations begin at the mine they are subject to surveillance by the engineers of the commission, and if it appears that the water escaping from the impounding dams carries too much mud and debris, or for any other reason they think fit, the commission revokes the license and the mine must close down.

This law applies only to the drainage basins of the Sacramento and San Joaquin valleys, and is not sub-

ject to enforcement in such counties as Siskiyou and Trinity, where the smaller rivers empty into the Klamath River, an unnavigable stream, and so into the ocean.

It would seem by this that the law perfectly protects the farmers and the navigable streams, while at the same time it gives the miner a right to work his property under certain restrictions. The commission is composed of unbiassed men with no interests on either side, and who look at the whole matter from an engineer's point of view.

Either the debris can be impounded or it can not. Many applications have been refused, and numerous licenses revoked after the impounding works proved unsatisfactory to the engineers of the commission. As to the constitutionality of the law, the decisions of the courts of this country, the Circuit Court of the United States and the Circuit Court of Appeals of the United States have upon three occasions sustained it. It is now, however, to be again questioned on the basis stated. That is to say, the engineers of the California Debris Commission—a board of government engineers—has granted a license and permits the mine to run; while the Anti-Debris Association—a private organization—contends that debris is escaping, and endeavors to enjoin the mine.

If then, the Courts decide that injury is being done by the debris said to be escaping from this mine, and an injunction is granted prohibiting work, notwithstanding the issuance of the license by the only constituted authority—the California Debris Commission—the whole business of permitting hydraulic mining will be again thrown back into the courts, and the power of the Debris Commission set at naught. Then the California miners will have another revival of the whole controversy until Congress passes a law which will stand an ultimate test in the courts. Under present restrictions, and the necessity of impounding debris, not half of the ground can be washed as when the debris passed off freely, as the debris must settle in the basin provided behind the dam until the water may pass off clear. For these reasons hydraulic mining in the drainage basins of the Sacramento and San Joaquin rivers, California, is not as profitable as formerly.

However, the miners consider that "half a loaf is better than no bread," and have worked along as best they might, secure, in the possession of a license, from annoyance at the hands of the Anti-Debris Association. With this security removed, and the constant fear of interference and injunction, the hydraulic mining industry would lapse into the condition it was before the Camminetti law was passed. Hence the issue of this suit is looked to with the greatest interest by the hydraulic miners of California.

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THE RETURN OF THE MINING ENGINEERS.

At about 11 o'clock Sunday evening, December 1, the remnant of the party of Mining Engineers, whose destinations were New York or east thereof, pulled into the Pennsylvania station at Jersey City. The trip from Chicago to New York was about the most tedious one of the entire trip, not because of any weary condition of the party, but because of the failure of the Pennsylvania railroad to keep the train on schedule time. The special train from Chicago to New York was scheduled to run as a second section of the New York and Chicago Limited, but instead of keeping the train on time, no effort seemed to be made by the railroad company to give it ordinary express speed. In the trip from New Orleans to Chicago, the Illinois Central made a record run and brought the two trains into Chicago more than an hour ahead of schedule time. The New York train was delivered promptly to the Pennsylvania Railroad, which handled the train to New York with a loss of five hours in running time.

Our last report published in the souvenir edition of November 30, contained an account of the Mexican meeting up to Friday, November 22, at which time the party of excursionists was at San Luis Potosi. A telegram from Las Esperanza, the last stop in Mexico, sent on Wednesday morning, and which gave an account of the journey up to the time of leaving the country did not reach the office of the JOURNAL until after the forms were closed on Friday morning.

This message stated that the ball given to the engineers' party at San Luis Potosi was the most brilliant of all the social functions extended the Institute. It was given in the club room of the Sociedad Potosina, a building which has been used for club purposes for about 125 years. In the club house is one room dedicated to the use of ladies and no man is allowed to invade it. Many of the ladies of the engineers' party took supper in this room.

The trains were held for two hours at San Luis Potosi in order that the party need not be hurried from the entertainment, and left the city at 2 o'clock a. m., instead of midnight as scheduled. The following day (Saturday) was spent on the trains en route to La Barra, a resort on the gulf shore six miles from Tampico. The route lay through gorgeous mountain scenery; down heavy grades and around sharp curves along the edges of nearly perpendicular precipices 1,000 feet or more in depth. These two trains were the longest and heaviest passenger trains ever taken over the road and while the magnificence of the scenery was enjoyed, everybody felt much relieved when the lower plains were reached in safety. A stop of both trains was made at Cafetal, where in a surrounding of luxuriant tropical growth, a beautiful cascade falls into an equally beautiful pool and passes under a natural bridge called Puente de Dios (Bridge of God). Stops were also made at El Abra Falls, a series of magnificent cascades, rushing through a narrow gorge, and which are capable of producing an enormous power. It is easily possible to utilize this power for the generation of electrical energy, which can be used at San Luis Potosi or possibly at greater distances. The first section of the train also made a stop at Choy Cave, but as the second section had been unfortunately delayed, it did not reach this interesting spot until after dark. To reach it required a descent of 200 feet over a path dangerously rough even in day light and it was considered too hazardous to attempt it in the dark.

Sunday was spent quietly at La Barra. Many took advantage of the fine beach and surf. Bathing in the surf in the latter part of November was a novelty for all. Religious services were held in a pavilion near the beach. This day of rest and quietness was welcome to all. Early in the afternoon the trains were hauled into Tampico and left that city at 5 o'clock for Monterey. This trip was made over the roughest piece of roadbed encountered on the trip. It was impossible to keep the trains on time or close together and they reached Monterey, the first section 4 hours late and the second section 3 hours later. On account of these delays a part of the programme at Monterey, particularly the formal reception, etc., had to be abandoned. As soon as the first section arrived its passengers were transferred to a special train and taken to the works of the American Smelting and Refining Company. On its return it picked up the passengers of No. 2, which, had by this time arrived, and the entire party was then taken to the works of the Monterey Smelting and Refining Company, and to the new blast furnace and steel plant constructing by the Monterey Iron and Steel Works. The former establishment is the only one in the Republic where fine gold and silver are produced. The method employed is a combination of the Park and the later Moebius processes, the silver being deposited from the acid solution upon a horizontal moving belt. Souvenirs of the visit in the shape of small phials of the electrically deposited silver were presented to each visitor. At the iron and steel works was found under construction a thoroughly modern and complete plant from the blast furnace to the machine shops. At present one furnace only is building, but this is a large one—85 feet stack, 18 feet bosh, and with 13 tuyeres. It will have a capacity of 400 tons of pig iron per day. The works will include a gas generating plant, open hearth furnaces, rolling mills, machine shops and foundry. The two last mentioned are now in operation. They are equipped with up-to-date labor-saving machinery, prominent among which are enormous overhead traveling cranes, electrically driven. This is also the only plant of its kind in Mexico.

A grand ball in the Juarez Opera House, which was attended by the Governor and his staff, terminated the day.

On Tuesday, a special train conveyed the party to the Diente and Zaragoza mines of the Monterey Lead Company. The special features of these mines were the rope tramways which carried the ores down the precipitous mountain sides to the railroad station. One span is 1,750 feet in length, the other 1,500 fe t. The openings to the mines were accessible only by the tramway and as time was limited none of the party undertook the journey. Luncheon was served in a large pavilion at the railway station, after which the party returned to Monterey. The luncheon was made an opportunity of expressing to Srs. Landero and Arozarena the party's gratitude felt for all they had done before and during the Institute's meeting to promote its success. These gentlemen had been most active in arranging the programme and looking after the comfort and pleasure of the visitors. They greeted the two trains at Chihuahua and remained with them until the last evening at Monterey. They were given three hearty American cheers which were gracefully acknowledged. Upon the return to the city a technical session of the Institute was held in the Governor's Palace, at which Mr. Edwin Ludlow read a paper descriptive of the coal fields and coke works at Las Esperanza, which were to be visited the next day. Prof. Emmons of the United States Geological Survey read a paper prepared by Mr. Thos. Witherbee, on the iron mines and furnaces of Durango. This was followed by an animated discussion in which Messrs. Olcott, Kent, Fackenthal, Wister and others participated. In the evening a concert was given in the plaza, followed by an informal dance in the Casino.

Monterey was left behind at midnight and Las Esperanza reached the next morning. The party was taken over the works and into the mine by Mr. Ludlow, and his assistants. Eagle Pass was reached about 7 o'clock, the customs and quarantine officials causing as little delay as possible, and by 9 o'clock the trains were speeding across Texas, homeward bound. The second section made a short stop at Beaumont the next day (Thanksgiving), and was backed out to the oil-field at Spindle Top. No gushers were turned on, however, and the visitors had to be content with a view of the cluster of rigs and the method of drilling. Half a day was spent in New Orleans on Friday, and at 12 o'clock the trains started on their quick run to Chicago which was made in an hour less than schedule. The party began to disintegrate at Baroteran and some dropped out at nearly every important stopping place after that time. Two cars could easily have accomodated the remnant that reached New York, Saturday night.

When the Institute trains reached Chicago, a letter signed by every member of the party was mailed to Dr. and Mrs. Rossiter W. Raymond. The letter contained in a few words the regret the members felt at the absence of their long honored secretary and his beloved wife, and expressed the heartfelt sympathy

felt for them in the affliction which kept them at home.

Two pleasant and almost simultaneous incidents marked the trip from New Orleans to Chicago. At the "first call for dinner in the dining car" the entire party of each train crowded into its commissary, and Mr. Theodore Dwight, in charge of section 1, and Mr. Edward W. Parker, in charge of number 2, were each presented with two handsome pieces of old Creole silver, in acknowledgment of the trouble they had taken in looking after the comfort and safety of the two trains. Prof. Geo. E. Ladd made the presentation speech to Mr. Dwight, Mr. W. E. C. Eustis conducting the services in No. 2. Both of the victims were taken entirely by surprise, but no fatalities resulted.

This report should not be closed without a word of acknowledgment to Mr. E. E. Olcott, the president of the Institute, and to Mr. Theodore Dwight, its acting secretary upon this occasion. They are entitled to, and have the gratitude of the entire party. Mr. Olcott was always present and always ready. His remarks, whether made in Spanish or English, were well chosen and gracefully expressed. He was a power in himself and was highly instrumental in making the meeting a success. To Mr. Dwight is due the credit for making all the arrangements for the excursion. The securing of the trains, arranging the schedules, purchasing supplies, and carrying out the details, involved an enormous amount of work and the exercise of unlimited patience. The fact that over 200 persons were carried nearly 9,000 miles, on a trip lasting thirty days, in a foreign country, without serious delay, accident or ill health, shows how well Mr. Dwight planned and executed the excursion.

PETROLEUM IN JAVA.—The correspondent of the Java *Code* writes: "The second refinery of the Moera-Enim Petroleum Company is almost completed, and will be at work in December. The output of crude oil is increasing. Good drilling is being done on the Kampong Minjak field. The improved condition of Babat property is said to be due to the fact that the new director has taken the management of the drilling operations into his own hands No pipe line will be constructed to that field, tank steamers being able to transport more than 300 tons of crude oil therefrom. A second pipe line is to be constructed to Kampong Minjak."

KANSAS COAL MINING

By W. R. Crane.

The coals of Kansas, Iowa, Missouri, Arkansas, the Indian Territory and Texas belong to the Western Central Area of the Carboniferous strata or the Pennsylvania series. Of the 98,000 or 99,000 square miles included in this portion of the field, 20,000 lie within the State of Kansas, of which only about 15,000 square miles are productive; the western portion being barren, and only a small part of the eastern portion is actually productive at the present time.

Distribution of Productive Areas.—The most extensive mining is done in the southeastern part of the State, principally in Cherokee and Crawford counties. See Fig. 1, which is a map of the State.

The principal mines are located from one-half to three miles from the outcrop of the upper and lower strata of the Weir-Pittsburg coal, covering an area extending in a northeast and southwest direction, including Mineral City, Flemming, Frontenac, Weir City, Chicopee and Pittsburg, and continuing as far northward as Arcadia. As will be seen, on examining the map, Fig. 1, the whole northern portion of Cherokee, and the southern part of Crawford counties are or have been mined quite extensively North and west of this area coal has been mined, but not so extensively as to the southward, yet considerable coal has been taken from the mines in the vicinity of Fort Scott, Pleasanton, Mound City and Arcadia.

The district, second in production and therefore in importance, lies north of the Kansas River and on the west bank of the Missouri. This district is a continuation of the Weir-Pittsburg horizon.

Leavenworth and Atchison counties are the only ones productive of coal to any great extent, although there are small mines in the northern part of Brown County. Several good strata of coal were struck in a deep bore-hole at Atchison during the past year. Whether they can be mined to advantage is a question to be determined upon after further drilling. It is, however, questionable, whether at the present price it will pay to mine this coal, if it is possible under the existing disadvantages of depth and artesian waters.

The district third in importance includes the mines at Topeka, Osage City, Burlingame, Lebo and Eureka, and extends even to the State line on the south.

The district last in importance and productive principally of lignite and brown coal, is located in the northern central part of the State, and includes portions of six counties. As will be seen in Fig. 1, this district lies wholly within the Cretaceous area, and is the most westerly coal bearing formation in the State.

The Occurrence of the Coal.—The Kansas coals occur in shale beds alternating with limestone strata of varying thickness and an occasional unconformable sandstone bar, usually lenticular in form, which partially or entirely cuts out the coal. Such irregularly interposed beds of sandstone are more abundant in the southern part of the State and in the thin seams of low grade coal. Taken as a whole the coal is uniform in quantity and quality. The Weir-Pittsburg lower seam averages about 40 inches, and the upper about 30 inches. Passing northward and westward the coal strata become thinner and the quantity of ash increases quite materially.

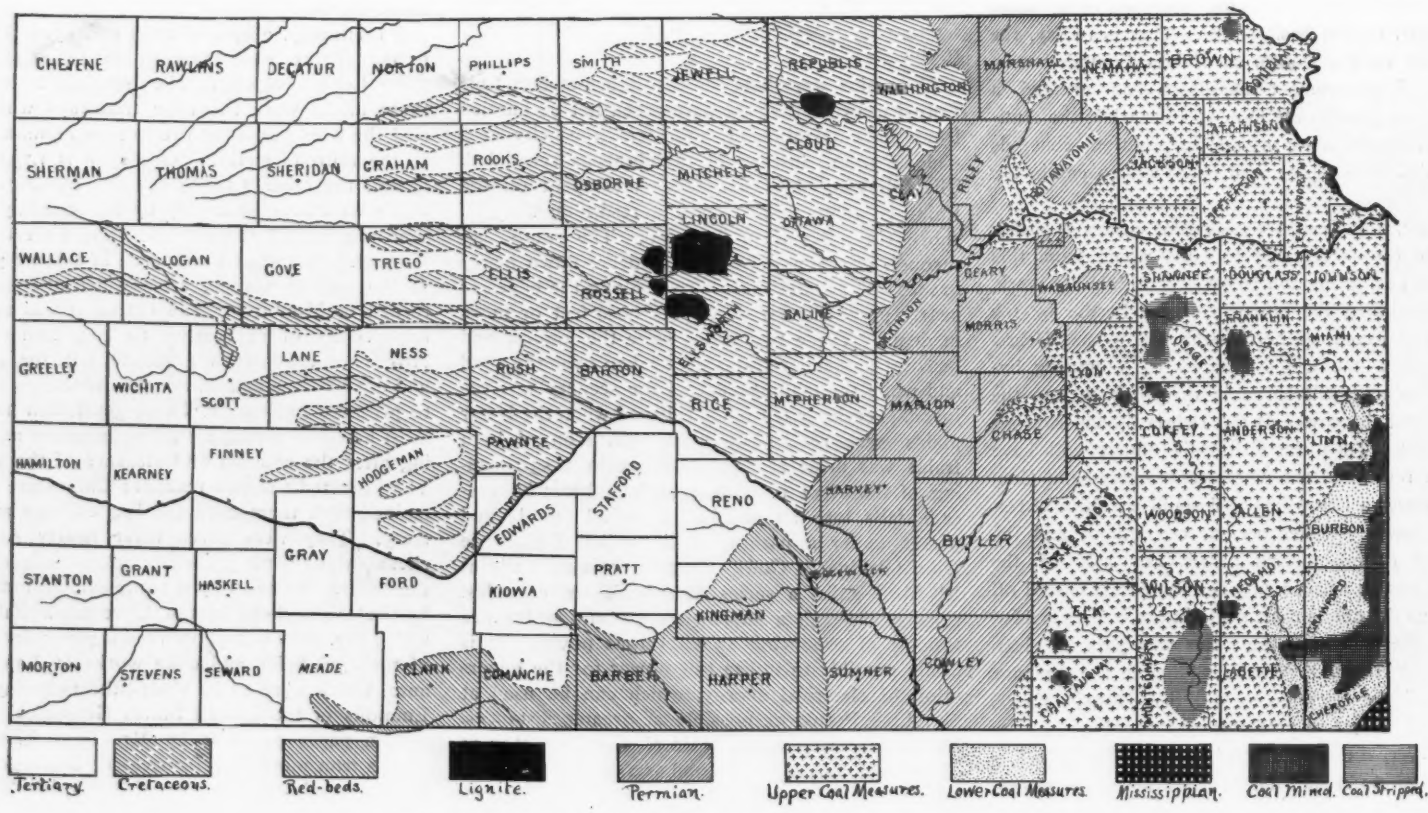


FIG. 1. MAP OF KANSAS, SHOWING THE COAL FIELDS OF THE STATE

Inclination of Coal Strata.—The lower stratum dips to the westward at an inclination of from 16 to 20 feet to the mile, while the upper stratum, although following in a general way, has a somewhat slighter inclination—averaging from 6 to 8 feet less to the mile than the lower, in its westward extension. The average northward inclination of the lower stratum averages about 4 feet, while that of the upper is in the neighborhood of 3 feet. The difference in inclination would seem to indicate that during the interval between the production of the two beds, there was an excessive westward thickening of the shale deposits.

The vertical distance between the two strata—the upper and the lower—although constantly increasing as the mining operations are pushed westward, is so slight over the area worked that it is hardly noticeable, and therefore of no material importance. The coal strata at Leavenworth maintain the same relative inclination as their southern extension in Cherokee and Crawford counties, while those at Osage City, Burlingame, etc., follow in a general way, yet at a somewhat slighter dip.

Local Phenomena.—That there has been a disturbance of the coal-bearing formations is apparent, and that such disturbance occurred after the formation of the coal and a portion at least of the overlying

strata is obvious on examining the mines in the eastern portion, and especially the southeastern part of the State. True, no serious nor extensive faulting and folding exists, yet faults with displacements varying from a few inches to 8 feet have been met with and more or less marked folds noticed in the shales overlying the coal strata.

That some orographic movement has taken place is made clear by the common occurrence of a certain peculiar formation, known as "horsebacks," or "horses," "wants," "troubles," "nips" and "clay veins." (Fig. 2). The origin of these peculiarly shaped formations is generally attributed to fissures formed subsequent to the coal strata and filled with the clays existing in beds beneath the coal, which have been forced upward, into cracks formed in the more or less solid coal, by the enormous pressure of the superincumbent strata; that is, by the well known phenomenon of "creep."

The source of the disturbances causing the faults, foldings and cracks was probably the Ozark Uplift, the center of which disturbance was located a hundred miles or so to the eastward. The Kansas coal beds, lying as they do at the outer limit of the disturbed area, were only slightly affected; thus, as a rule only fissures were formed. Horsebacks are found in Cherokee, Crawford, Bourbon and Linn counties, but in abundance only in the two first named.

Besides the horsebacks there are other formations, which, although often bearing the same name, differ considerably from them not only in shape but in origin. (Fig. 3). These formations are best known as "pots," "kettles" or "bells" and seem to be exaggerated forms of unconformable strata, commonly known as "rolls" and "slips." These formations, unlike the horsebacks, are found not only in the Osage shales, which yield the Osage, Burlingame and Topeka coals, but in the coal strata at Leavenworth, which lie within the same horizon as the Upper and Lower coals of Cherokee and Crawford Counties.

The origin of the horsebacks and bells is entirely different: the former, as pointed out, are due to fissuring of the coal strata, while they were essentially in the same stratigraphic position as at the present time; the latter were probably the result of cessations in the deposition of the formative materials produced by external conditions, such as exist to-day in swamps and sluggish streams, where eddy currents and sudden inrushes of sediments and organic matter are of common occurrence. This much is certain at least, that the bells were formed contemporaneously with the coal strata and not an after product orographic action as were the horsebacks.

Kinds and Character of Coals.—Only one variety of coal can be said to exist, at least in paying quantities, in the State; namely, bituminous coal, although some lignite is mined in the northern central part. There are, however, several localities along the Missouri line where semi-anthracite coal is mined, but in such small quantities as to attract little or no attention, except from the scientist. It is usually conceded that such coals owe their anthracite character to the same disturbance which produced horsebacks, faults, etc., in the same and neighboring coal beds. This view has been partially confirmed by the writer in finding a fairly good grade of anthracite coal in horsebacks. The same has also been found in the contact of bells with the surrounding shales.

Associated together in the same place may be found several varieties of coals, which can readily be recognized by their physical appearance. Roughly, the coals may be subdivided into the following varieties: Glance, splint and mineral charcoal.

The mineral charcoal usually occurs at the top of the face, while the glance and splint varieties alternate throughout the stratum. In some of the mines, especially those of the southeast, a bituminous shale, which goes by the name of "black jack," is common and being compact and tough interferes seriously with the loosening of the coal.

"Rusty" coal is found at the outcroppings of the coals in several localities, especially at Fort Scott. The variety "Fort Scott rusty" is known to all dealers in the State, and is much sought for as a domestic fuel. The coloring is due to the oxidization of contained pyrites, which have subsequently been leached out, leaving the coal free from the clinker forming iron compounds. It has been determined, from tests made on representative coals from all over the State, that the chemical and physical characters of the coal vary considerably and are most pronounced in passing from the southeast to the north and west.

At Cherokee, Cherokee County, the coal was found, by test, to have the highest calorific power of any in the State, 15 pounds of water being evaporated for every pound of coal burned. At Osage City the calorific power drops to about 10 pounds of water to one of coal, and continues to decrease as we pass to the north and west, or to the higher geological horizons, which are coal bearing. This depreciation in the value of the coals of the higher horizons is probably due to several causes, the most important of which are: first, difference in age; second, a change in the quantity and quality of the coal—producing vegetation, coupled with a change in conditions of deposit.

The coal beds of the older geological formations lie in the extreme southeastern portion of the State, (Fig. 1). The coal beds lying to the north and west belong to a more recent geological formation or to a higher horizon. They are thinner and softer and, as a rule, have more impurities in them than have the coals of the lower horizon. The coal beds of the lower and therefore older formations have been subjected to a higher pressure, as shown by the clay veins, faults and foldings. The upper beds show no signs of any orographic movement. Whether there was any marked change in the quality of the coal producing vegetation is not so easily determined as the fact regarding the quantity. The thinness of the coal beds demonstrates that there must have been a falling off in the quantity of vegetable growths. With a less rapid deposition of vegetable matter a change in the conditions of deposition would of necessity occur, which would in many cases seriously effect the chemical and physical properties of the resulting coals.

Method of Prospecting.—Prospecting is done almost entirely by some modification of the American oil well or cable tool system, although occasionally a diamond drill is employed on city or railroad contracts. The churn drills, as the former are often called, are self-contained machines, the motive power of which is usually steam or gas, and, in rare instances, horse power. They are operated by two men, and are easily controlled and regulated, especially in the comparatively soft formations met with in the coal-fields. The usual rate of drilling is from 10 to 30 feet per day, which varies largely with the amount and character of limestone that must be passed through. The limestones occurring in the Coal Measures have much flint interspersed through them in the shape of more or less irregular, often lenticular, shaped nodules, which are very disastrous to rapid drilling. There is also a stratum of lime-

FIG. 2. HORSE-BACK CUTTING THROUGH COAL SEAM.

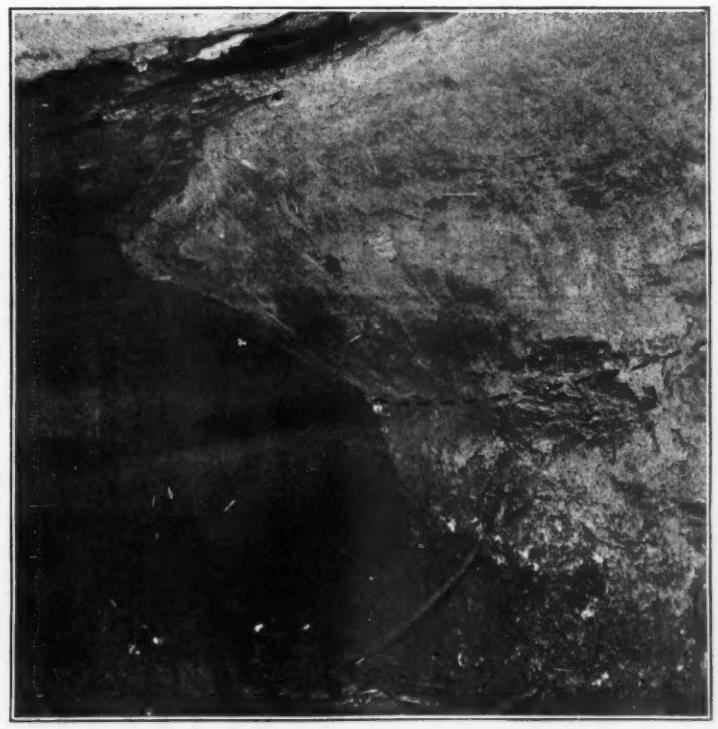


FIG. 3. A BELL, SHOWING HOW COAL IS CUT FROM NORMAL THICKNESS TO REDUCED THICKNESS UNDER DOTTED LINE.

stone lying above the coal in Crawford and Bourbon counties, which goes by the name of "bastard" rock. It is blue, close grained and extremely hard to cut. Luckily, however, the limestone strata encountered are comparatively few in number and thin, seldom over 5 feet in thickness, while in the majority of cases they are 2 and 3 feet thick. The sum total of all limestone strata passed through may, however, run up into the scores of feet, which is especially true in the northern portion of the field. The other materials that occur are shales and sandstone, which present little or no difficulty to the drilling operations. The holes are drilled and cased, and besides serving their purpose as test holes, are used for wells, providing the water is pure, which is rare, if they do not penetrate deeper than the coal bearing shales.

No special system is followed in the arrangement of the holes. Occasionally as many as 4 or 5 are drilled in a quarter section, advantage being taken in most cases of low ground. Test holes are, as a rule, drilled at the point where a shaft is to be sunk. Several serious mistakes are on record where this rule was ignored. Thus a shaft was sunk one-half mile from such a test hole in all confidence that the same thickness of coal would be found, but, unfortunately, the coal had been cut out or rendered useless by the great number of horsebacks that crossed and recrossed one another. Occasionally test pits or shafts are sunk to the coal stratum, when it is known to lie not far from the surface, as in runs and on the outcrop. Trenches are also cut, perpendicular to the line of the outcrop, along the surface and even through the coal itself, thus proving the deposit as far as they are driven.

Methods of Mining.—Two systems of mining are employed in the mines of the State, namely: the longwall and the room-and-pillar. By far the greater part of the coal is mined by the latter system, although nearly as many mines are worked by the longwall system in the thinner coal of the northern districts. Besides the two systems mentioned, much coal has been obtained, in times past, from strippings on or near the outcrops. Little stripping is done at the present time, because most of the available outcrop has been worked to its economical limit; that is, stripping has been carried to the point where too much waste must be handled to make it a paying enterprise.

The systems of mining will be considered in the order of their importance, namely: room-and-pillar, longwall, and stripping.

Room-and-Pillar Mining.—This system is employed in the mines of Cherokee, Crawford and Bourbon counties, and therefore in the thickest coal strata of the State. There are two reasons why this system is especially applicable in this district: First, the mines are as yet located near the outcrop, and are therefore comparatively shallow, seldom exceeding over 200 feet in depth. Any settling or caving of the roof would cause a corresponding settlement of the surface, thus destroying valuable farming lands. Second, as mentioned above, the coals of these counties are more or less cut up by horsebacks, which can without much difficulty be utilized as supports for the roof.

There are two methods of working the room-and-pillar system, namely: The Double and Single Entry methods. The former is probably employed more extensively than the latter.

Details of Double Entry Method.—The shaft having been sunk to and through the coal stratum and a sump formed, the work of driving the main gang-

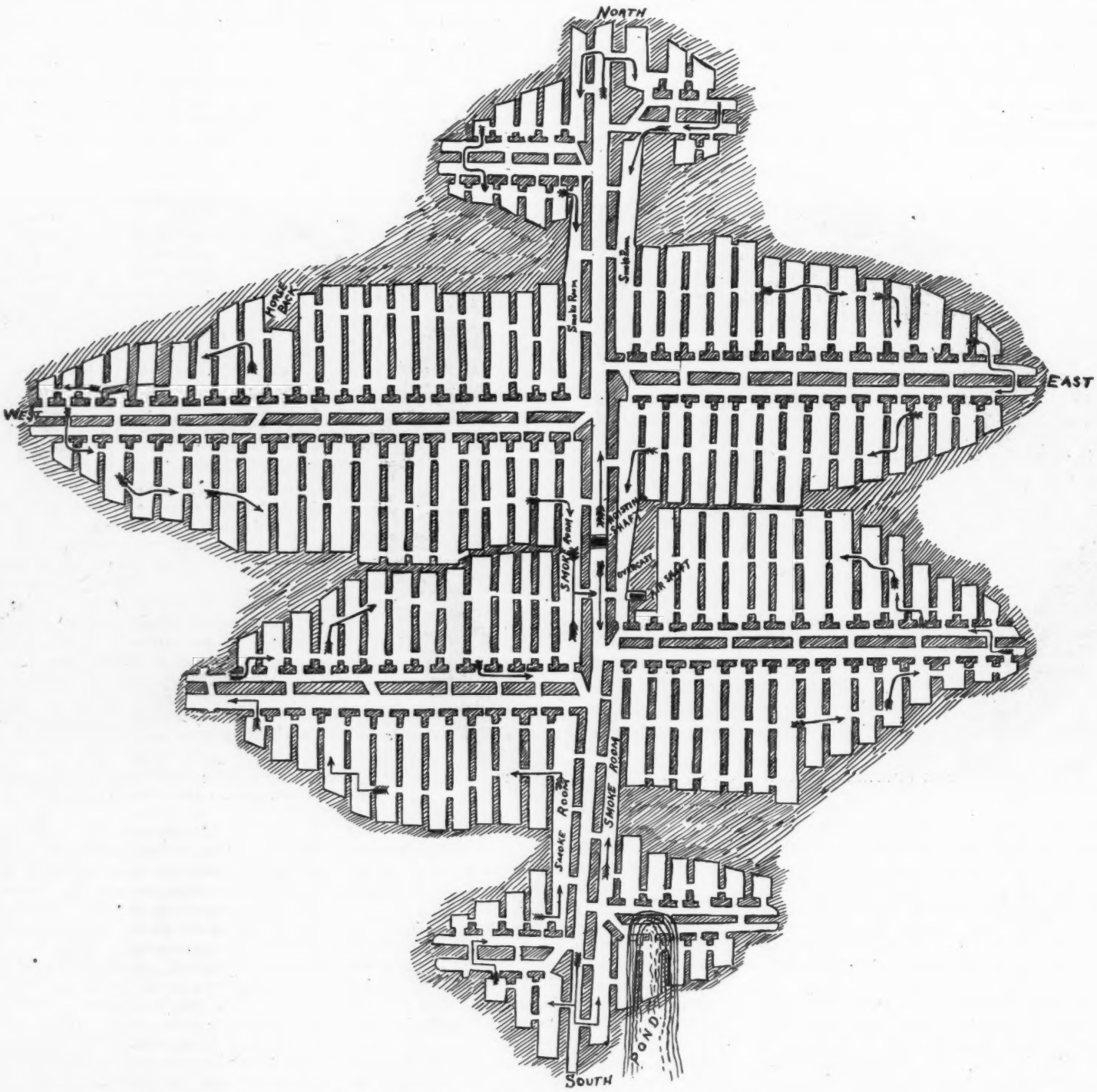


FIG. 4. PLAN OF TYPICAL DOUBLE-ENTRY MINING IN KANSAS.

way is begun. This gangway is driven in two diametrically opposite directions, usually north and south, provided the existing conditions permit such an arrangement. See Fig. 4.

At the same time that the main gangway is driven or after it has reached a distance of several hundred feet from the shaft, entries are driven on both sides and at right angles to the gangway and at a distance of about 100 feet apart. The entries on one side are advanced somewhat ahead of those on the other, so as to prevent the two opening onto the main gangway at the same point, thus interfering with the proper handling of cars and rendering ventilation more difficult. At a distance of 20 or 30 feet from the gangway, on the entries, and about 100 feet apart other entries are driven, forming an angle of approximately 30° with the line of the gangway. These entries run for a distance of 18 to 20 feet, when they are turned at an angle of 60° and driven parallel to the entry from which they branched or perpendicular to the main gangway. These two parallel entries constitute the "double" of the double entry method of mining, and are maintained in straight lines, when possible, throughout the whole extent of the mine.

Beside the entries already described, other entries are ultimately run on either side of the main gangway, and at equal distances from the same, which connect with the side entries and form an auxiliary system of air and haulage-ways. It will then be seen (Fig. 4), that there are really three haulage-ways—the two outer ones connecting with the main way every 100 to 150 feet and the main gangway, thus providing free passage to the shaft in case of accident, besides facilitating the handling of cars and ensuring perfect ventilation. The blocks of ground formed by the system of gangways and entries are worked by rooms driven at right angles to and on both sides of the double entries. These rooms ultimately make connection, and with the exception of the pillars left between them, provide a means of extracting all of the coal in such blocks.

From 250 to 300 feet from and parallel with the main gangway, secondary gangways are driven to facilitate the haulage of coal from portions of the mine at considerable distance from the shaft. These secondary gangways together with the other haulage-ways subdivide the mine into large square or rectangular areas, which are worked independent of the remaining portions.

Details of Single Entry Method.—This method does not differ materially, in general plan, from the former, the chief difference being the use of only one entry instead of two parallel ones. The rooms are driven from both sides of the single entry and all of the haulage, as well as ventilating currents are carried through it. It is apparent that a congestion of traffic is liable to occur, of either loaded or empty cars; besides, when a passage is used for both haulage and ventilating purposes, serious trouble is almost sure to result, not the least important of which is the reduction of efficiency of the working force and therefore the output.

Method of Mining the Coal.—Coal is loosened in the working places by means of pick, bars and powder. A cutting is made in one side of the face of coal by means of a pick, which takes a man about 8 hours to make such an opening. The cutting extends along one wall of the room through the coal vertically and into the bed for a distance of 3 or 4 feet from the face. One or more charges of powder are then placed in the coal several feet from the cutting, which when fired force the loosened coal into the same, for which purpose it was made; that is to unbind or free the coal. Having thus formed a cavity along one side of the room, the loosening process can be extended across the entire face. In the mean time—between shots—a new cutting can be made in the same line as the first, thus prolonging the wall of the room and freeing another layer. The force will then by the successive operations of cutting and blasting assume a serrated or notched form and can be extended indefinitely.

The method of making cuttings is often varied in one of the two following ways: Either make a V-shaped excavation in the face of the coal or a cutting diagonal with the face. In either case shots can be placed on both sides of the excavation and a complete layer or slice removed with dispatch, yet not more rapidly than with the former method after the third cutting has been completed.

The Longwall System of Mining.—This system is employed in all mines where the thickness of coal strata does not exceed 2 or 2½ feet, and is therefore employed in the mines of Osage, Shawnee, Leavenworth and Atchison Counties. (See Fig. 5). The method of mining usually employed with this system, is longwall by advancing, although in exceptional cases longwall by retreating is resorted to.

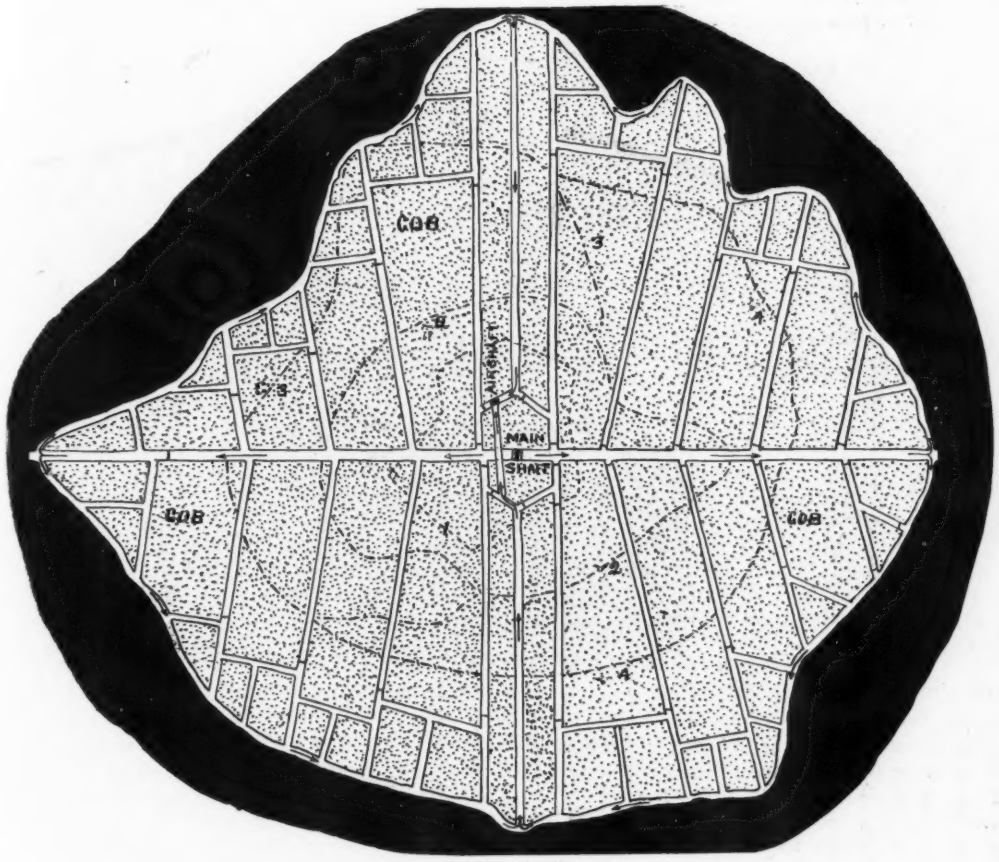


FIG. 5. PLAN OF TYPICAL LONGWALL MINING.

The operations of sinking the shaft and forming the sump are identical with the same operations employed in room-and-pillar mining. Two gangways are driven horizontally through the coal, intersecting one another at the shaft at right angles. These gangways are, as a rule, driven in a general north and south, and east and west direction, and are pack walled, besides having the shale of the roof removed to a height sufficient to allow the passage of men and mules, being formed as the face of the coal advances. Along the gangways at distances of about 100 feet from the shaft and equal distances apart, are driven side ways or entries. The first two are driven on one, usually the north and south, gangway at right angles to the same, those on one side being advanced somewhat ahead of those on the other. Beyond the first entries, mentioned above, are other entries driven at an angle of 110° or 115° with the main gangway.

These entries form temporary haulage-ways and ventilating passages to and from the face of the coal, while certain ones are walled up and enlarged, thus forming permanent passages. The coal is not worked in rooms, but along a continuous face, although the space of 40 odd feet between the two passages on the side entries are occasionally designated as rooms. In a mine where the work has been carried on uniformly in all directions from the shaft the face of coal is in the form of a long wall extending around the shaft.

After advancing the face for a considerable distance from the shaft, cross-drive-ways, connecting the entries, are driven, along which the coal is worked. These cross-ways are walled up and furnish temporary and in some cases permanent haulage-ways. The coal is worked from the cross-ways in a manner similar to that employed in the side entries, the face being carried forward for about 200 feet, when a new cross-way is driven parallel to the former, which forms a basis for a new set of rooms.

Details of Method.—The general arrangement of haulage-ways and ventilating passages having been completed and the longwall or face formed, the operation of removing or winning the coal is next in order. This is accomplished by undermining the coal for a distance of 2 or 3 feet, which cutting is usually made beneath the coal, where such a precedure is possible, otherwise the lower portion of the coal stratum must be removed. The former method is, however, that usually followed. The coal having been undermined is knocked or forced down by wedges placed between the coal and roof or by charges of powder similarly placed. The coal will fall of its own accord provided the undercutting has been made deep enough and sufficient time is allowed, or the settlement of the roof, even with shallow cuts, is often sufficient to break down the coal in a few hours. Coal mining machines have been used quite extensively in some mines and are still employed in longwall work, although not as much as formerly.

The waste formed by the undermining operations is utilized in building pack-walls and is thrown back from the face, filling up the space between the floor and roof, which with walls of rock or short props form a temporary support for the roof. A long narrow passage is thus formed between the face of coal and the pack-wall, which furnishes an exit for the coal and an air-way, besides allowing subsequent undercutting, preparatory to another advance of the face.

As a rule the larger pieces of waste are built into rough walls, perpendicular to the face, which temporarily support the roof, while the waste is being filled in as a pack-wall, but are not intended to prevent the settling of the roof. As the face advances the haulage-ways are walled up and the roof brushed down. In many of the entries no attempt is made to wall up, the height being maintained by success-

ively brushing down the roof, which is often done several times as the settlement continues. The ultimate settlement frequently amounts to 18 or 20 inches.

Mining by Stripping.—Strip pits furnish an excellent and economical method of mining where the coal stratum lies close to the surface, as at or near the outcrop. (See Fig. 6). The character of the superincumbent materials regulates, largely, the extent of such workings, both vertically and horizontally. One or more strata several feet in thickness of hard limestone overlying the coal usually prohibits the employment of the stripping method, while a shale roof of 16 or 20 feet in thickness can be removed and the coal extracted with profit. The cost of stripping varies from 8 to 15 cents per cubic yard.

Method in Detail.—Lots, generally located on the bank of a creek or run, varying from 200 to 400 feet in length and 45 to 50 feet in width are marked out. Scrapers are then employed to remove the overlying material, which is hauled out of the pit by

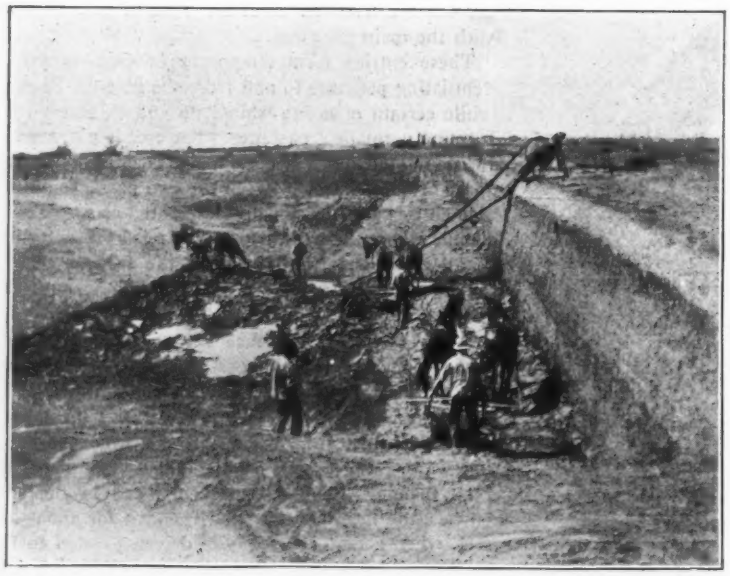


FIG. 6. STRIP-PIT MINING, SCAMMON, KANSAS

roads leading out of the pit ends, and also thrown into the creek or hollow at the side. When all of the dirt and stone have been removed the coal is cut through, blasted or pried out, broken up and hauled by wagons to market.

All of the coal having been removed from the pit a new lot is marked out and the denuding process again begun. The material removed is dumped into the pit from which the coal has just been taken, and this process is continued until the coal stratum retreats to such a depth beneath the surface as to render further stripping too expensive. At this point drifting is resorted to, the entries being driven into the banks of the strip pits.

Underground Handling of Coal.—In the room-and-pillar system of mining, tracks are laid into the working places or rooms, the cars being trammed in and out by hand. Once in the entry they are hauled by a mule to a station in the main haulageway, thence in trains of ten or twelve cars to the foot of the shaft.

In the longwall system the coal is loaded on buggies—double runner sleds or drags—which are drawn by hand to the entries where the coal is loaded into cars. The coal is carried thus for 20 feet on either side of each entry, one entry serving for a room of 40 feet of face. There are in reality, however, two entries to a room.

In the Leavenworth Coal Company's mine, in North Leavenworth, a system of rope haulage is employed and has been successfully carried on for years. The system is of the endless rope type, and by it coal is hauled over a mile from the face to the shaft. The motive power is furnished by a 40-h. p. electric motor. The driving drums make 12 revolutions per minute. A tension carriage is located near the cable drums to keep the rope taut. Guide sheaves are placed at all curves and a return sheave 6 feet in diameter is placed at the end of the system. A pilot car is sometimes used, which is furnished with grips, or individual couplings may be employed, in which case the pilot car is dispensed with.

Ventilation.—Although there is little gas met with in the Kansas coal mines, yet in certain localities it does occur in such quantities as to render mining dangerous. Other gases, as the products of the combustion of explosives, are the predominating ones and must be removed to render mining possible. The systems of ventilating will be seen to best advantage on examining Figs. 4 and 5, which are the above described plans of room-and-pillar and longwall workings. The course of the air currents together with cut-offs and overcoats can be readily traced. The Guibal type of fan is commonly employed and can be used as pressure or exhaust as desired; they are, however, as a rule, operated as pressure fans, being enclosed in a casing or house, which is usually placed at some distance from the other buildings and driven by a separate engine. See Fig. 7.

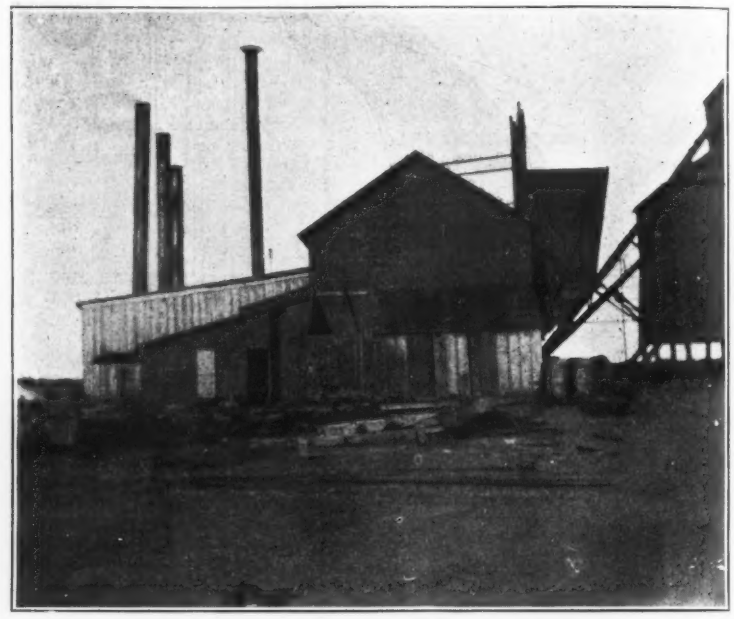


FIG. 7. FAN HOUSE, WEIR CITY, KANSAS.

Hoisting of Coal.—The raising of coal from the foot to the top of the shaft is, in the larger collieries, accomplished by means of geared, toothed and friction clutch and direct-acting winding engines. As a large number of different forms are used, it is rather difficult to say which form is in most common use. Probably the last named or the direct acting is looked upon with the greatest favor. Self-dumping devices or tipples are common, although in the smaller mines the cars are mostly dumped by hand. Multiple deck cages are employed in the Leavenworth Coal Company's plant, where double-decked cages are operated, the cars being run on and off the cages by steam rams.

The coal, on reaching the surface, is dumped into chutes, where it is sized. The usual method of treatment may be outlined as follows:

Coal dumped into chute to (1).
Over-sized (lump), going to car.
Under sized lump to (2).
(2) Grizzly, ¾-in. spaces, with inclination of 32°.
Over-sized (egg) going to car.
Under-sized (nut and slack) to car or (3).
(3) Revolving screen of perforated metal with ¼-in. holes.
Over-sized (nut) to car.
Under-sized (slack) to car.

The above outline gives the simplest method of treatment employed. As a rule instead of having the first grizzly with uniform spaces throughout its length, it is often made up of two and three sections, which vary in width of space from the top of chute down, or the first section may be perforated metal screen with round holes. By this arrangement two finished products are produced on passing the first grizzly or set of screens, as lump and egg, while the nut and slack are separated on passing over another grizzly, placed beneath the first, or are caught in a chute and run through a revolving screen, where they are separated.

Shaking screens were formerly used in some of the large collieries, in which case the screens were perforated metal and parallel bars, being placed in steps. The passage of coal was facilitated by the jerking or jigging motion of the whole screen support. As many as 4 and 5 screens were often so placed. A complete separation was thus obtained without subsequent treatment. The wear of the screens (perforated metal being used largely especially for the upper sections) was excessive and when much pyrite and shale occurred, this wear was even prohibitive. The shaker or jigger screens were largely built when it was the custom to pay the miners for lump coal only, and gradually passed out of use when a law was passed requiring the operators to pay for mine-run coal. This necessitated the placing of scales at the top of the chute in order to weigh the coal before it passed over any screen.

It is common practice to have a section of the upper portion of the chute cut away and hung on the scale rods. This suspended portion or weighing box is provided with a gate placed on the lower or chute end of the box, which is closed before the coal is dumped and, after weighing, is opened, thus allowing the coal to pass through the chute. Occasionally that portion of the track over which the car passes, before reaching the mouth of the chute, is arranged to act as the scale platform, in which case the weight of the car will have to be deducted from the total weight registered. The coal is again weighed as it stands on the railroad cars, preparatory to shipment.

As a rule no hand picking is attempted, except as the sized product passes into the railroad cars, then only the larger pieces of pyrite and shale are removed. In some of the larger collieries, boys are employed to pick out the impurities as the coal passes in chutes, but such a procedure is of rare occurrence, the coals, as a rule, being fairly free from pyrite, except in a few localities, and there is little or no shale parting. The so-called "black jack" or bituminous shale is the most troublesome. Occurring as it does beneath the coal, it is loosened in the process of mining the coal and is consequently more or less mixed with the same.

The extraction of coal in Kansas is, in some respects, more difficult than in several of the adjoining States, due to the existence of horsebacks, bells, etc.; yet the superior heat-producing qualities of the coal make it an aggressive competitor in the market of the central States.

A WET CRUSHING CYANIDE PLANT AT ELY, NEVADA.

BY A SPECIAL CONTRIBUTOR.

The mill which is now nearing completion at Ely, Nev., on the property of the Chainman Mining and Electric Company, is believed to be remarkable when viewed from the purely metallurgical standpoint. In capacity, it is one of the largest, if not the largest, combination plant in the country in which the prevailing plan of treatment of low grade gold ore is cyaniding after wet crushing and amalgamation. By this is meant that no one feature of the metallurgy is to be considered as an accessory to another, but that the whole mill is so planned that it shall act as a unit in the treatment of the ore. Again, this mill is one of the most completely equipped plants for this class of milling, in that no one product of the ore is left or discarded for future treatment, but all are worked out in the one handling and rejected as tailings only after full treatment by the latest improved methods known. For example, the tailings from the concentrators are settled, drained and leached before they leave the mill. The slimes, which form no unimportant factor of the milling, are treated without recourse to the usual plan of settling in outside settling ponds. While nothing can be given at this time of the actual mill results, this article is prepared as a preliminary description of the plans and anticipates future detailed descriptions of special features.

This property, which consisted of a poorly developed mine with considerable equipment in the manner of small mills, hoists, etc., was purchased in 1900 by an eastern company with a large number of stockholders. Some milling was done during the winter with the five-stamp mill and a few cyanide tanks, from which it was possible to arrive at the proper method for treating the large quantity of low grade gold ores of the mine. Owing to the very great diversity in character of ores, it was found that only a combination mill would be suitable for the classes of ore that the mine would produce.

The single treatment of the ore by cyanide alone gave an average extraction of about 75 per cent of the gold content. Amalgamation alone gave a saving of from 25 per cent to 40 per cent, depending upon the class of ore. Panning tests and former reports of concentration practice indicated an extraction of one ton of concentrates of a value of $100 from 100 tons of ore, which concentrates contained most of the lead, a proportionately large amount of the silver of the ore and considerable gold. From these data the mill under description was designed.

The United States practice contained practically no mill from which it was possible to draw ideas for this mill as a whole. The custom mill of the Montana & Denver Reduction Company, Beartown, Montana (see ENGINEERING AND MINING JOURNAL, March 24, 1900) is of this type, though the intermediate tanks and the slimes plant are lacking. The general designing of this mill is by Fred D. Smith, mill superintendent, who was much assisted by A. B. Browne, formerly of the Montana & Denver Company, now metallurgist and consulting engineer of the Chainman Company. The details are by Mr. F. C. Richmond, of the Salt Lake Hardware Company, Salt Lake City, Utah. The slimes plant, to be described later, is entirely the work of Messrs. Smith and Browne.

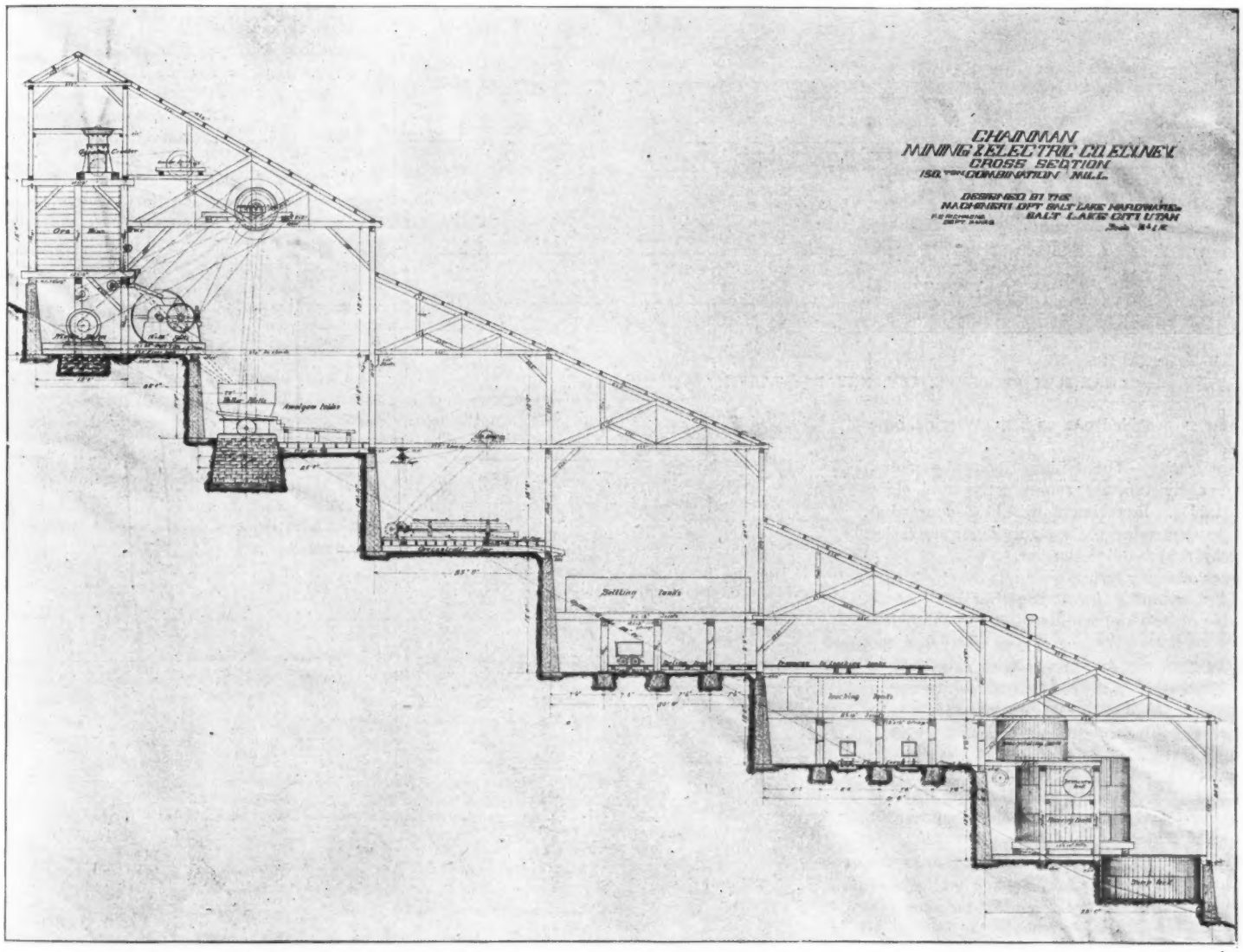
The mill, of which the plans are shown (Fig. 2) consists of eight departments or operations.

1. Screening and Crushing.
2. Amalgamating.
3. Concentrating.
4. Sizing and Settling.
5. Leaching.
6. Precipitating.
7. Slimes Treatment.
8. Refining and Assaying.

The plans show fully the first five departments with scant treatment of the precipitating department and nothing of the slimes plant and refinery, as these were added after the general plans were prepared.

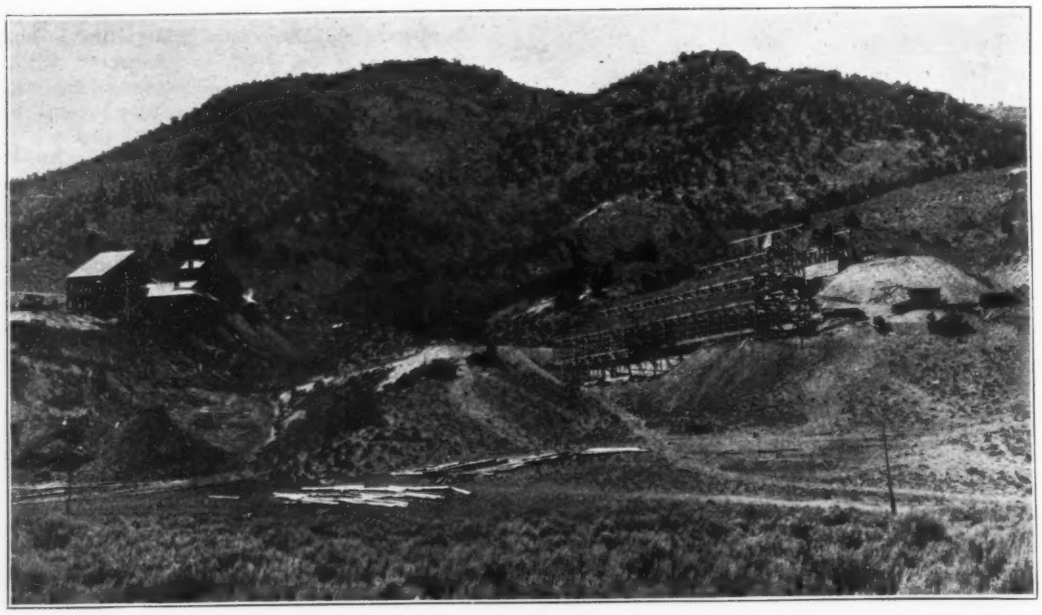
1. *Screening and Crushing.*—The ore is dumped on grizzlies at the hoist and is brought to the mill by tramway and placed in bins according to the size, the coarser being first crushed by the Austin gyratory crusher. This size is further crushed by a set of 16 by 36-in. rolls, which feed in a divided stream into the two No. 3 Trent Chilean mills. The finer grade of ore is fed by plunger ore feeders directly into these Chilean mills without the intermediate crushing by rolls. These mills are arranged to work independently of each other and so that either one may be operated on the entire output of the rolls and from either bin. When the very soft nature of the ore in its granular condition is taken into consideration, it is safe to assume that the capacity of the crushing plant is not less than 300 tons in 24 hours.

2. *Amalgamating.*—For amalgamation four plates 4 by 9 feet are placed in connection with each Chilean mill on a grade of 1¼ inches. These plates are of copper, 3 pounds to the square foot, and plated with 1½ ounces of silver to the square foot. Nearly all ores of this mine that carry upwards of $9 per ton in gold will amalgamate not less than $2.50 per ton, most of which will be caught on the plates when a No. 12 punched screen is used. A



SECTION OF CHAINMAN MILL, ELY, NEVADA.

very necessary requirement in the crushing machinery is that the ore shall be ground as little as possible, and that as soon as broken to a No. 10 or 12 mesh it shall be quickly discharged from the battery in order to avoid the production of a great amount of fines or slimes. For this reason the Chilean mills were specified instead of stamps. To operate the crushing and amalgamating departments there is provided one 50 h. p. Westinghouse A. C. motor, 2,000 volts.



Hoist and Old Mill. New Mill.

CHAINMAN PROPERTY, ELY, NEVADA: TAKEN AUGUST 15, 1901.

3. *Concentrating.*—The tailings from the plates, after proper division, are run directly upon eight Cammett tables. Experiments will be conducted at the first to determine the advantage or necessity of sizing by a hydraulic classifier.

The ores carry varying amounts of lead carbonate in a granular form, together with some heavy oxide of iron and small amounts of sulphides, though to all appearances the ores above the 200 level of the mine are very thoroughly oxidized.

The product of this operation will be, as stated above, most of the lead in the ore which seems to carry much of the silver—2 to 8 ounces per ton of ore—and from $35 to $50 gold per ton of concentrates. Sufficient iron is found in the product to neutralize the silica contained. One 10 h.p. Westinghouse A. C. motor, 400 volts, is provided to operate the tables.

4. *Sizing and Settling.*—The settling tanks are four in number, each 26 feet square and 5 feet deep, and made of 3/16-in. steel. The pulp for the concentrator launders is fed into rotary distributors, from which it falls into the tanks filled with water at all times. The overflow passes out at either end of the tank through rows of 1¼-in. holes into launders which conduct the water bearing the slimes to the department provided for the treatment of the latter. These settlers are of the same size as the leaching tanks and for this reason it was deemed a wise precaution to have four of the capacity of one day's run, thereby allowing a reserve space, as well as providing means to regulate the discharge of slimes by dividing the inflow and thus diminishing the amount of water flowing out.

The ore is drained and dried by means of the vacuum pumps, two in number, each with 10-in. cylinders and 12-in. stroke. The ore is discharged through four sludge gates down into the cars which run over the tops of the leaching tanks. The room for these tanks is 185 by 30 feet, and contains, beside the settling tanks, two of 16,000 gallons capacity each, and two of 8,000 gallons capacity for storage of cyanide solution.

5. *Leaching.*—Six tanks, 26 feet square and 5 feet deep, of 3/16-in. steel, are provided for cyaniding the ore. These tanks are similar to the settling tanks in shape and size as well as in the manner of exhausting by vacuum and draining, and for the discharge of the tailings. The system of piping the solutions and wash-water as well as for the leaching will be described later. Mill runs have shown that a 96-hour leach is sufficient for the extraction. However, six tanks with approximately the capacity of one day's run were provided, which allows five days for leaching and one for discharging and filling.

The building for this department is 185 by 32 feet, but experience has already shown that the width should have been increased to 36 feet to allow some ease in passing around the tanks as well as free access to install and repair the pipe lines.

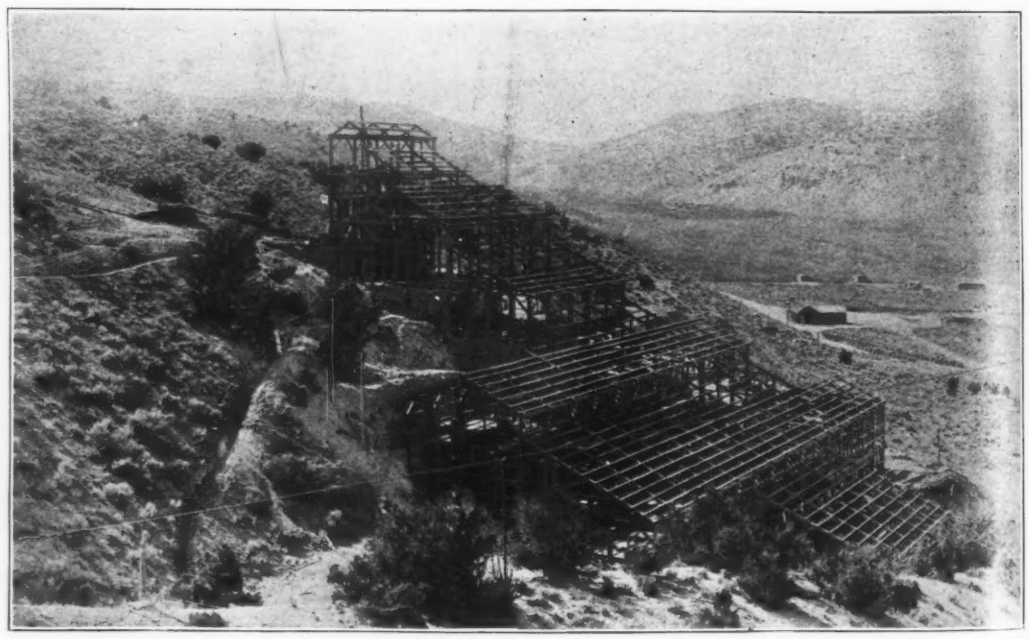
6. *Precipitating.*—This department occupies a room 60 by 32 feet, and contains besides the vacuum pumps, described above, and the power machinery, the full equipment for the zinc dust method of precipitation. This latter consist of two precipitating tanks, 10 feet diameter by 5 feet deep, which are provided with hoods and ventilating flues; one receiving tank 16 feet diameter, 12 feet deep; one pump tank 14 by 6 feet; two No. 3, all iron, Gould's rotary pumps; two No. 5 filter presser with 36 chambers 1½ inches, and an air compressor 8 inches diameter with 6 inches stroke. The latter machine is already too small for the service required of it and should in no case be specified for a plant using this method of precipitating where the capacity of the plant is to be a minimum of 200 tons per day. Two pressure tanks each 5 feet diameter and 12 feet long are used, one for an air receiver, the other as a pressure tank to contain the solution after it has been precipitated, when it is necessary to place the same under pressure to force it through the filter presses.

A feature of the department worthy of note is the cement floor under all pumps and presses, which has a drainage to the pump tank, thus insuring against all losses of gold solution or precipitates from any cause.

One 20 h. p. Westinghouse A. C., 400-volt motor furnishes the power for these machines.

7. *The Slimes Plant.*—This department is the most remarkable of all and is worthy of a fuller description, which will be delayed until results of operation can be given. The previous mill and laboratory experiments showed that when crushing to a No. 12 mesh the amount of fines or slimes produced would approach 35 per cent of the original weight of the ore crushed. Mill tests made by F. D. Smith showed conclusively the fallacy of the proposed scheme of settling everything in intermediate tanks under the misapprehension that, by the mixing attending the shovelling into the leaching tanks, the ore would be in a condition to leach at a fair rate.

The problem confronting the metallurgists was to treat from 40 to 50 tons of slimes per day without making use of settling ponds, and with the least possible expense allowable on a low grade material. The plant as designed, which is now partially equipped, is so arranged that at no time does the slime ore require any handling or mechanical conveying other than sluicing by means of water under pressure. The overflow from the intermediate tanks passes through V-shaped boxes of special design in which practically 98 per cent of the material will be caught. This is drawn off intermittently through taps in the bottom of the box directly into the agitating tanks. From the agitating tanks the mixture of slime and gold solution is dropped into decanting tanks, where it is allowed to settle for an hour. The supernatant liquor is passed through one filter press, thence pumped into the precipitating department of the main works. The thick slimes are washed out of the settling tanks into a pressure tank by means of sump cyanide solution where the mixture is put under pressure and forced through a 36 by 36-in. filter press, where all of the liquor is taken out by extreme pressure. The cakes of solid slimes are



ERECTING CHAINMAN MILL; WORK ON AUGUST 15, 1901.

dropped from the press and either sluiced out by water or dropped into cars to be carted to the dumps.

8. *Refinery and Assay Laboratory.* These occupy a separate building which is 32 by 48 feet. They are entirely separated from each other by a solid wall to preclude the possibility of vitiating the work of the assay laboratory by the dust or powder from the products of the refinery.

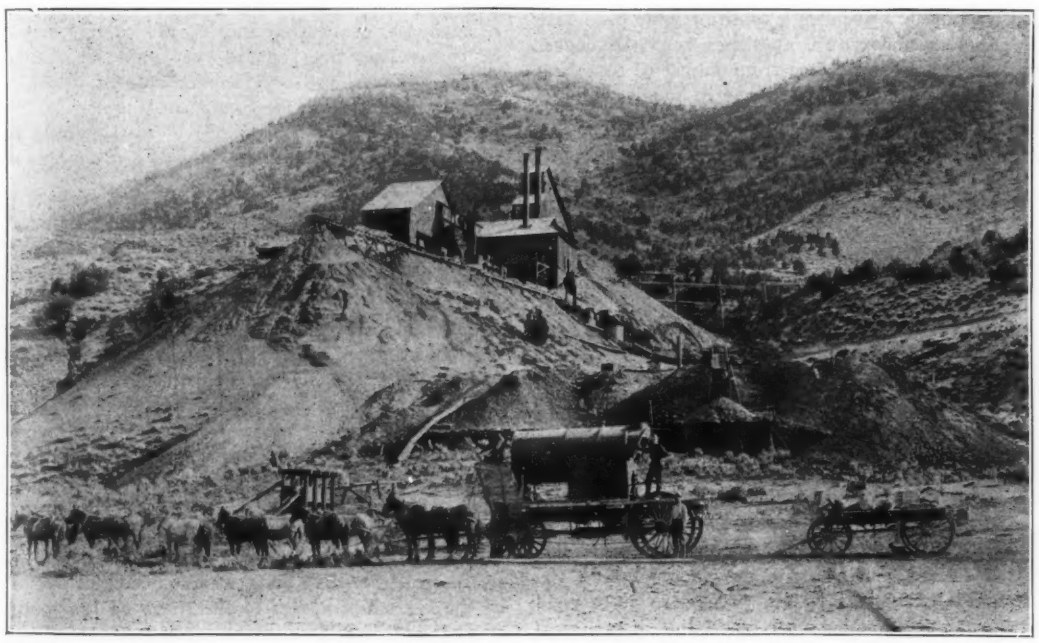
The assay laboratory consists of four rooms each furnished with everything necessary for a most completely equipped chemical laboratory. The rooms are the furnace room, the chemical laboratory, the balance room, and the grinding and sampling room. The assay furnace is of the wood-burning type, and worthy of special note to mining companies situated, as this one is, remote from railroads and from resources of fuel other than pine wood.

The refinery is equipped with one lead-lined digestion tank, 6 feet diameter and 5 feet deep, in which the product is treated with sulphuric acid. A No. 4 double exhaust fan operated by a 10-h. p. motor is provided to carry away the gases formed in this treatment. A lead-lined filter press with 30 chambers 18 inches square is furnished to dry the gold powder after digestion. The melting furnace is of a size suitable to take an 18-in. graphite crucible, and is connected with a retort furnace for reducing the amalgam. The drying furnace for drying the aurocyanides and for burning the papers and cloths from the filter press, as well as for drying the gold after digestion, is made with an iron muffle 32 by 54 by 8 inches.

The company offices form a part of the refinery building and are commodious and elegant in appointments. Throughout the mill steam power is provided in Corliss engines to relay the electric motors or to supply any deficiency of power through accidents or otherwise. The mill is heated by steam throughout which is furnished by a 100 h.p. boiler located in a suitable boiler house detached from the mill.

The electric power is generated at the company's power plant in the town of Ely, two miles distant. The motive power is water, of which there is a stream of 600 miner's inches under 180 feet head. The plant consists of one 60-in. double-nozzle Pelton water-wheel and one Westinghouse A. C. generator 2,200 volts, 7,200 revolutions per minute, two-phase. This plant also lights the mines, offices and mill buildings of the company as well as furnishes 400 lights, 16 candle-power, to residents and stores in the town. The company also owns and operates a telephone line from Ely to Eureka, Nev., where connection is made with the Western Union Telegraph lines and the railroad.

The prevailing idea in planning the mill and the designs of the machinery is the cheap treatment of low-grade gold ore, and an easy expansion of the leaching capacity of the plant to double the present amount. The crushing, concentrating and precipitating departments are capable of double the amount of work now demanded of them.



HAULING MACHINERY TO CHAINMAN MILL, ELY, NEVADA.

THE SUDBURY NICKEL MINES.

BY A. MCCHARLES.

The progress of nickel mining in the Sudbury District this season has been of the most gratifying character in almost every respect. By the end of the year the total output of all the mines will be just about double that of two years ago. Though no less than ten different companies own workable nickel properties in the district only three of them are doing any actual mining now, and some of the others are practically defunct. The failure of these companies was due to various causes, but in no case to the ore in their mines giving out. In fact, of all the properties so far exploited in the district, and on which the surface outcrop was of any promising nature, only on three have ore-bodies not been found, and sufficient work has not been done yet on any of the three for a final conclusive test.

In this connection two other things about these nickel mines are worth pointing out. First, that the diamond drill is not a safe method in testing such irregular deposits of ore. On one mine after boring over 6,000 feet with the drill in "radiated" holes, a fine large ore-body was found by sinking a shaft between two of the holes, but missed by the drill. As a consequence of these results whenever a nickel property is bonded now a condition is put into the option that no diamond drill test shall be made, but that all development work must be done by sinking shafts, etc., in the usual way. Second, a number of parties for outside capitalists have been in the district this season exploring for nickel mines with the magnetic needle. But the old local prospectors, some of whom have been out on the ranges more or less every season for the past fifteen years, say that this is a very unsafe guide, as there is often more attraction on bands of mineralized shales than on most of the best and largest bodies of nickel ore; and also that a real nickel mine of any size is seldom wholly concealed even in the green woods, but crops out boldly on the surface in some place. Then in proximity to all such ore-bodies the diorite rocks in which they occur have undegone a remarkable change for half a mile or more on all sides.

There is no absolute or even general law of occurrence in the Sudbury nickel mines, but several important facts have been pretty well established in the working of the ore-bodies. For one thing, it is not seriously disputed any longer that the only assurance of a deep mine ,and not a mere pocket of ore, is in having a contact deposit lying at the junction of the granite and the diorite. But at the same time indications of a mine on a contact between quartzite and diorite, such as occur in a few places in the district, have proved to be worse than of no value. Nor has any small uncertain "show" like connecting links between the larger deposits of ore, ever turned out to be a mine. A nickel property is either a mine as shown on the surface or it is nothing at all.

The remnants of the whole nickel belt, not previously taken up, have been closely gone over again during the past three years by some of the old-time prospectors, and more recently by the "instrument men" above referred to, but not a single new discovery of any note has been made, and the most of them are now turning their attention to an iron range north towards the Height of Land, and also to the copper belt along the north shore of the Georgian Bay. They say it is no use looking for nickel mines any more. There are only three groups of nickel properties now remaining unsold and in the hands of the original owners. The first group is on the west end of the north nickel range, and at present inaccessible for the want of transportation facilities, being from 15 to 25 miles back from the nearest point on any of the railway lines in the district. The second group is in the township of Levac, some 25 miles west of Sudbury, and from 4 to 8 miles to the north of the main line of the Canadian Pacific Railway at Onaping station. The third group is on the main nickel range and consists of the North Star Mine in Snider and the Cochrane Mine on Blue Lake, on what is locally known as the high grade belt, with a number of other scattered properties in different parts of the district as far south as the Spanish River.

TEXAS OIL AS FUEL FOR LOCOMOTIVES.

The Gulf, Colorado & Santa Fe, according to data presented in the *Railroad Gazette,* has made more progress than any other railroad in Texas in equipping its locomotives to burn oil, and Mr. T. Paxton, the master mechanic, has furnished some interesting data in relation to the work.

The Gulf, Colorado & Santa Fe now has 15 locomotives converted from coal to oil burning and 75 will be converted as soon as the work can be done. For the present this road will use oil for locomotive fuel as far north as Cleburne, Texas. So far the work has been somewhat experimental, and the details of the plans may be modified from time to time as a result of experience.

In an ordinary locomotive the grate is taken out, the lower part of the fire-box lined with fire-brick, and a brick arch or deflector built in front of the tube-sheet. The length of the bricks forming this arch is determined by the width of the fire-box. For side walls and the inverted arch, ordinary commercial fire-brick is used. Experience on this road has shown that fire-bricks which soften under heat are preferable, as they form a bond which adds strength to the wall and prevents its shattering under the shocks incident to service. Fire-bricks which have very high heat-resisting qualities and which tend to crack when cooling are said to be of little use in a locomotive burning fuel oil. In all cases the burner is located below the mud ring, the grates are removed and an inverted arch is put in the ash pan. The oil may be introduced at the front or back of the fire-box, depending upon the shape of the ash pan.

Two forms of fuel oil burners are being used. The Lundholm burner is said to give very good results. The Booth, a patented burner, is used quite extensively on the California lines of the Santa Fe, but only experimentally on the Gulf, Colorado & Santa Fe. The Booth oil safety valve, which controls the

discharge of oil at the bottom of the tank, is used. The valve is opened by a bell cord running into the cab and is closed automatically in case the engine breaks away from the tender.

The tanks for carrying oil are placed in the space between the wings of the water-tank, which is usually occupied by coal. On passenger locomotives the oil tanks hold 1,850 gallons, and on freight engines from 2,000 to 2,200 gallons, according to the size of the locomotive. A tank is placed in the coal pit, and is coupled through suitable rings and gaskets to a large flat tank which lies on top of the tender. The oil tanks can easily be removed in case it is desired to return to the use of coal. In switching service the oil tanks contain 1,000 gallons. The tank is then made to fill the coal pit and it projects high enough to give the required capacity in a single tank without blocking the sides of the tender or interfering with the view of the enginemen.

For discharging oil from the tanks to the burner, air pressure not exceeding 10 pounds is used. Steam is used as a vaporizer, combining the steam with the oil in the burner. In localities where low temperatures prevail, or where the oil lacks fluidity, it is found desirable to interpose a heater box between the burner and the oil tank, in which the oil is raised to as high a temperature as possible with steam before it goes to the burner. However, the high fluidity of the Beaumont oils, the small effect on the oil of low temperatures and the location of the road in the South, render the heater box less of a necessity on the Gulf, Colorado & Santa Fe than would usually be the case.

For supplying the locomotive tanks with oil, delivery tanks and stand pipes are erected. The oil is furnished to these delivery tanks from large storage tanks of 37,000 barrels capacity.

On the Gulf, Colorado & Santa Fe, with present prices of coal, there is a saving of from 25 to 40 per cent by the use of fuel oil. The lower figure applies near the source of the road's coal supply, while the larger saving is in the vicinity of the oil fields, the cost of transporting the fuel being a determining factor in both cases. Other important economies following the use of oil which can only be estimated are: Avoiding all claims for damage by fires set by locomotives; the reduction of clinker pit expense, and greater expedition in handling locomotives at terminals. Other advantages follow the use of oil fuel, such as: Freer steaming and freer running locomotives and consequently greater ability to handle maximum loads; a uniform grade of fuel makes it practicable to adjust draft appliances to get the best results under all conditions; owing to the easy and exact regulation of the fire possible with oil there is a further economy as the labor of firing coal conduces to extravagance in its use.

Mr. Paxton points out that an important point to be observed by firemen on oil-burning locomotives is to so regulate the rate of combustion as to avoid overheating the fire-box plates. It is possible, in firing with crude oil, to burn off projecting rivet and crown-bolt heads, as the heat may be made so intense that radiation through the plate does not carry it away fast enough to protect the sheets. In localities where the feed water contains impurities which form hard scale on the plates, this trouble is augmented owing to the lower conductivity of the scaled plates. It is of less importance where the water is so soft that the fire-box plates are always clean. This is a thing, however, which is wholly under the control of the fireman, and if care is taken there should not be serious trouble.

The Gulf, Colorado & Santa Fe Company is also having five engines built at the Baldwin Locomotive Works which will use oil as fuel. These are 10-wheel passenger engines having Vauclain compound cylinders and Vanderbilt fire-boxes. The latter are circular corrugated fire-boxes, placed inside the boiler barrel, in the same way that corrugated furnaces are used in marine boilers. For burning oil they are lined at the rear end all around, and on the bottom and up to the center in the forward part, with firebrick. For burning the oil the Booth injector is used.

The estimated weight of these locomotives is 135,000 pounds on the driving wheels, and 40,000 pounds on the engine truck; a total weight of 175,000 pounds in working order. As the complete interior of the cylindrical fire-box becomes heating surface when oil fuel is used, except for one opening in the bottom, the amount of heating surface in the fire-box is very materially increased, and therefore the total becomes correspondingly greater. Calculated on the basis of the mean internal diameter of corrugations, the heating surface in the fire-box is about 177 square feet, and the total heating surface thus becomes about 2,988 square feet. One important point should be considered in its relation to the Vanderbilt fire-box, namely, the extreme care that is required of the fireman to avoid burning off staybolt and rivet heads in the ordinary fire-box. It is apparent that in the clear field offered by the cylindrical fire-box much, if not all, of such precaution becomes unnecessary. These locomotives can probably be forced as much as desired, as long as ordinary care is used to set the burners in a way that will not concentrate a blowpipe action on any part of the exposed steel.

From reports of experience with the cylindrical fire-box in bad-water districts, the impression is that the corrugated form, by its action in expansion and contraction, has a tendency to disintegrate hard scale deposits on the crown, and thus keep the deposit falling and the metal free from danger of scorching. This also is a distinct advantage in burning oil fuel, and it will be very interesting to compare the work of engines of the same class, but having in one case ordinary fire-boxes and in the other Vanderbilt fire-boxes.

EXPORTS OF NICKEL FROM CANADA.

By Our Special Correspondent.

An act to amend the Ontario Mines Act passed its third reading before the provincial legislature on April 27, 1900. The tentn paragraph, dealing with the remittance of fees where ores are treated in Canada was one vitally affecting the well-being of the Canadian Copper Company, of Sudbury, which is, in reality, a Cleveland organization. The paragraph in question reads as follows: "Where ore or minerals that have been mined, raised or won in this Province are smelted or otherwise treated in the Dominion of Canada by any process so as to yield fine metal, or any other form of product of such ores or minerals suitable for direct use in the arts without further treatment, then and in every such case the fees provided herein or such proportion thereof as may be fixed by the Lieutenant-Governor in Council shall be remitted, or if collected shall be refunded under such regulations as the Lieutenant-Governor in Council may prescribe."

This provision was made with the idea of forcing the refining of the nickel matte in the Province of Ontario. Now, however, the Federal Ministry has objected to this clause in the Mines Act of Ontario, considering it unconstitutional, insomuch as it interferes with the trade and commerce of the Dominion, a Federal prerogative. A test case has been made of this matter, and the courts have been asked for an interpretation of the law, so that in a few weeks at furthest the Canadian Copper Company will know where it stands. There is this difference between the powers of the Supreme Court in the United States and that of Canada, that, whereas, in the United States the courts only pass upon the constitutionality of an act when a concrete case is actually brought before them, in Canada the Dominion Government may submit to the Supreme Court the question of the validity of any Provincial act, whether such act has been really before the court or not in concrete form.

According to the latest Government blue-book dealing with such matters, which is that for the fiscal year ending June 30, 1900, matte containing nickel to the value of $1,040,498 was exported from the Province of Ontario to the United States, and the question as to whether these shipments of matte will continue or not will be decided by the answer which the Supreme Court of the Dominion shall make to the interrogation put to it by the Government.

A NEW BRITISH BLAST FURNACE.—The London *Colliery Guardian* says that Messrs. T. and I. Bradley & Son blew in a new furnace at Darlaston Green recently. It is 71 feet from the base to the dome; the furnace gases are utilized to drive the blowing engines and the other furnace machinery. It has a steel-cased shaft, with an internal capacity of 16,000 cubic feet, and it is capable of producing 1,400 tons of pig iron per week with a blast of 25,000 cubic feet per minute. The manager, Mr. W. J. Foster, has introduced several improvements in the furnace. The furnace at Darlaston was built by Messrs. E. Probert & Sons, Bilston.

IRON ORE IN HONDURAS.—*La Gaceta*, the official journal of Honduras, contains the draft of a contract for the concession of the iron-ore deposits of Agalteca, situated in the northwestern part of the Department of Tegucigalpa, which were declared State property by a decree dated February 28, 1899. These ores, for the most part magnetic, are said to contain 69 per cent of metallic iron. They are reputed very pure, containing no phosphorus and only a very small amount of sulphur. Limestone is found in abundance near these deposits, and water in sufficient quantity to furnish power. These iron deposits are, moreover, said to be abundant.

COAL PRODUCTION OF HOLLAND.—Boring operations are being continued in the recently discovered Limburg coal-field. Three mines are at present raising coal in the Dutch portion of the field, and during 1900 produced 320,224 tons, an increase of 107,252 tons on the previous year. There were sold of these 303,492 tons, or 100,948 tons more than in 1899. There were exported to Belgium 40,908 tons, and to Germany 143,851 tons. The average price per ton was 13.22 francs. The number employed was 1,149, against 813 in 1899. Of these, 902 were employed below ground. A policy of nationalization has been decided upon by the State, which in 45 years will be sole proprietors. The basin which is being conserved by the Government, lies to the south of Limbourg, along the German frontier, at a height varying from 300 to 650 feet above sea level. The length from north to south is about 12 1-2 miles. The area tested so far is about 94,500 acres. Within its borders are 35 villages with 67,093 inhabitants, and it is served by three lines of railway. In less than two years 48 concessions have been sought from the Government.

MINING REGULATIONS IN BELGIUM.—Considering that Article 19 of the Belgian Royal Decree of 1884, which regulates the working of mines, is not sufficiently explicit as to the sub-division of ventilation in fiery mines, and taking into consideration the reports of meetings in 1900 and 1901 of the commission appointed to revise the mine regulations, and also the reports of the Permanent Mine Committee, a fresh Royal Decree provides that, subject to the exceptions authorized by the competent administration, every air-current that has ventilated a working place, that is, a stall or series of stalls driven in one and the same seam between the two levels limiting a stage, shall be assimilated to a vitiated air-current; and stalls to the dip shall be regarded as belonging to the working place, while every exploring or preparatory working in coal or rock shall be considered, from a ventilation standpoint, as forming a distinct working place. Coal-masters are allowed six months' grace for conforming to these provisions or applying for dispensation therefrom; and in the event of unimportant or transient workings, the chief mine inspector of a district is empowered to grant dispensation.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

SPECIALLY REPORTED.

DUTY ON MICA SCRAP.—Small pieces of mica, which fall off in the process of thumb-trimming mica, do not constitute waste, but being still mica, used as such, and not having lost their character as merchantable mica, are dutiable under paragraph 184, act of July 24, 1897. Such merchandise is not known as mica waste nor is there any trade understanding or meaning of the term "mica waste," and it is, therefore, not dutiable under provisions of paragraph 463 for waste not otherwise provided for.—Appeal of Chicago Mica Company from Collector of Customs at Chicago; Board of General Appraisers.

WHEN ACTION OF EJECTMENT CANNOT BE MAINTAINED.—An action of ejectment to recover mining property cannot be maintained on the ground that the defendants have acquired it by relocation in pursuance of a conspiracy with plaintiff's partner, whereby such partner, who was not one of the relocators, ceased to do the necessary work on the mine and abandoned its possession, since these facts, whatever equities may arise as against the defendants, give plaintiff no legal title to the mine or any part of same.—Lockhart v. Johnson (21 Supreme Court Reporter, 665); Supreme Court of the United States.

LAND CLAIMED TO BE WITHIN MEXICAN GRANT NOT EXEMPT FROM LOCATION.—Land claimed to be within the limits of a Mexican land grant is not withdrawn and reserved from entry under the mineral laws of the United States by reason of the mere fact that the claim is before the court of claims for adjudication, since there is nothing in the treaty with Mexico to work that result, and the provision of the act of 1854 (10 Statutes, 308 c. 103), reserving such lands until the final action of Congress on such claims, was repealed by act of Congress, March 3, 1891 (26 Statutes, 854, c. 539, sec. 15), establishing the court of private land claims.—Lockhart v. Johnson (21 Supreme Court Reporter, 665); Supreme Court of the United States.

RIGHTS OF JUDGMENT CREDITORS HAVING LIEN.—The laws of the United States (Revised Statutes, section 2332), declares that nothing in the chapter of the Revised Statutes relative to the locating, holding, or procuring of titles to mining claims, etc., shall be deemed to impair any lien which may have attached in any way to any mining claim prior to the issuance of the patent. The court held that a judgment creditor having a lien on an unpatented mining claim was not obliged to adverse the claim of the locator under the Revised Statutes providing for the filing of adverse claims against one seeking a patent for a mining claim on the public domain.—Butte Hardware Company v. Frank (65 Pacific Reporter, 1); Supreme Court of Montana.

RIGHT TO BLIND VEINS.—Blind veins underneath prior lode claims belong to the surface location, under Revised Statutes of the United States, section 2322, and their discovery by running a tunnel, under section 2323, does not give the owner of the tunnel any right to them. The location of a tunnel site for mining purposes must be made in subordination to prior lode claims, and the tunnel has no right of way through them. The servitude imposed upon the senior location of a mining claim by section 2336, by giving a right of way to the junior location, whether that extends only through the space of the intersection of the veins or through the space of intersection of the claims, does not otherwise affect the exclusive rights given the senior location, or except therefrom the cross veins apexing in same.—Calhoun Gold Mining Company v. Ajax Gold Mining Company (21 Supreme Court Reporter, 885); Supreme Court of the United States.

ABSTRACTS OF OFFICIAL REPORTS.

Waitekauri Gold Mining Company, New Zealand.

This company's report is for the year ending May 31, 1901. The capital stock issued is £228,076, in shares of £1 each. The treatment for the year shows 25,606 tons of ore treated, the bullion from which realized £55,180. Sundry receipts were £555, making a total of £55,735. Expenses in New Zealand and London were £40,761, leaving a net balance of £14,974. The balance brought forward from previous year was £10,025, making a total credit of £24,999.

The mine report shows that the development work done included 160 feet shaft-sinking; 426 feet rises; 231 feet winzes; 2,648 feet drifts; and 5,719 feet stoping.

The average results show gross earnings of $9.60 per ton, and expenses $7.75, leaving the net earnings $2.85 per ton.

The directors' report says: "Out of the total balance of £24,999, the directors have written off £3,556 for depreciation of plant and machinery, £5,000 for development work in the mine, and £200 off the cyanide patent rights. Dividends and income tax absorb £13,019, interest on debentures £1,276, leaving a balance to credit of revenue account on May 31, of £1,948. The debentures outstanding on May 31 amounted to £18,150. Since that date £9,600 has been paid off, leaving £8,550.

"The shareholders were informed by circulars in January and February last of the disappointing fact that in the Golden Cross Section, at the 500-ft. level, as far as then ascertained, the lode was found to consist of calcite instead of quartz, and that it was intended to sink the shaft deeper with the expectation that at lower depths payable quartz would again be found. Further exploration at this level upon the Main Reef and Southern Cross lodes has shown that beyond the limits of the calcite body those lodes remain intact and contain considerable quantities of payable ore. Upon further consideration it was thought advisable that the shaft should be sunk deep enough to open the seventh level instead of the sixth; and it has accordingly been sunk to 700 feet, and a cross-cut is now being driven to cut the lodes. The estimated distance to reach the reef is 256 feet from the shaft. Mr. R. E. Williams, who has had large experience in mining in the colonies, was appointed manager in April last. He reports upon the mining position as follows: 'I am decidedly of opinion that the country rock and the ore body will be more reliable and compact at deeper levels, and even the drive north on the Main Reeef at No. 5 level beyond No. 3 winze furnishes evidence to support this theory, great improvement in the character of the lode being perceptible, although we are not yet out of the oxidized zone. Small bunches of sulphides giving very high values present themselves from time to time in the solid stone. The high values which have been obtained at the upper levels would lead anyone connected with mining operations to be sanguine as to the result of the development of the deeper development work. . . . Considering the whole question of the development of this section from a mining standpoint, I cannot see any reason why the ore-body should not be found to be a solid reef and of a payable nature at No. 7 level.'"

Enterprise (British Columbia) Mines, Limited.

The directors submit their report and statement of accounts made up to December 31, 1900. As the company was incorporated on May 15, 1899, these accounts cover a period of about 18 months. Although the company obtained possession of the property immediately following its incorporation, it was not until the end of February, 1900, that work could be started at the mine, prior to which the only work carried out was the shipment of the ore already mined, and the erection of the necessary buildings for the men, etc. Actual working soon revealed the fact that to sort the ore by hand was both expensive and wasteful, and consequently steps were taken for the erection of a suitable concentration mill, pending which shipments were restricted and work principally devoted to the further development of the mine. The accounts show a profit of £5,908, the whole of which has been employed in meeting the cost of further development, the erection of the concentrator and other capital expenditure. Details in connection with the design of the concentrator and the time required for the supply of the machinery brought the winter of 1900-1901 so close that its erection could not be taken in hand until the spring of this year, since when every effort was made to push the work forward. It is now completed, and advice of its having started regular work is daily expected. With a view to the saving of both time and labor, a complete compressor plant for machine drill work has been installed, which, together with the concentrator, is driven by water power, requiring no fuel and very little attendance. Early in August, 1901, the mine superintendent estimated the quantity of ore in sight as being sufficient to keep the concentrator supplied with 50 tons daily for 500 days. This quantity has been further increased by subsequent developments.

Mr. Oliver Wethered, one of the directors, has made an inspection of the property, and has submitted a report, dated October 8, 1901, from which the following extracts are made:

"In my opinion, the Enterprise Mine has a particularly good future before it, and although the vein is, of course, narrow compared with many, its exceptional richness in places compensates for this, and moreover its dip renders it a satisfactory mine to work—very little timber being necessary. But for the miners' strike of two years ago there is little reason to doubt that the Enterprise to-day would have paid substantial dividends, and I think the shareholders may look forward with every confidence to this being done at a very early date. In a letter received from British Columbia it was stated that there was ore in sight sufficient to supply the concentrator for a period of 500 working days; since this was written the developments have been considerably better than at any time during the company's history, and although I should hesitate to say how much the reserves have been increased, it is certain that the value of the reserves—having regard more particularly to the increased width and richness of the lode recently opened up—has materially improved. The concentrator is of the simplest and best design I saw in British Columbia, and I think it is only due to Mr. Fowler and Mr. Off (who is erecting it) to say that the work is thoroughly well done, and that the best results may be looked for from its working. In connection with the concentrator, and driven by the same water power, is a compressor for driving rock-drills, which will materially facilitate and cheapen the working of the mine. The necessary works in connection with the water power have been done in a thoroughly good manner, and should require very little renewal for many years to come. . . . Until the concentrator has been running for a few weeks, and the shipments of rich ore made regularly it will be difficult to say what the profits will actually be, but I have satisfied myself that from now on, our profits from the ore in sight will be very substantial."

SULPHUR IN NEW ZEALAND.—The New Zealand Mines Department reports the output of sulphur in the colony in 1900 at 1,692 tons, an increase of 465 tons over the previous year.

EXPLOSION ON A COAL SHIP.—The London *Engineer* says that recently, as some coal trimmers were about to resume the loading of a cargo of coal on board the French bark *Saint Anne*, of St. Nazaire, lying in East Dock, Swansea, on Monday morning, a violent explosion of gas occurred. The mate and two trimmers were slightly injured, and some damage was done to the ship. It is supposed that the gas had generated during the cessation of

work over Sunday, the principal part of the cargo having been shipped on Saturday, only about 50 tons more being required.

IRON ORE FOR CONCRETE.—A writer in *Nature* points out the advantage that would be gained by the use of magnetic iron ore as a material for concrete blocks. He points out that if magnetite is used instead of ordinary rock in the shape of fragments, and magnetic sand or ilmenite sand instead of common sea sand, concrete blocks can be obtained which have all the strength of the ordinary concrete blocks, and which weigh, when immersed in water, exactly twice as much as the ordinary blocks. Such an increase in weight makes the magnetic blocks far superior as regards resistance to the waves. Work constructed with magnetic blocks will stand when other work will be destroyed.

RUSSIAN RAILROADS IN CENTRAL ASIA.—We have heretofore referred to the proposed connecting line between the Siberian and the Trans-Caspian Railroad. Mr. Yugovitch, a well-known engineer, it is stated, has now asked the Government to allow him to construct a line of railway from one of the stations on the Siberian Railway in the Government of Tomsk to Tashkend, the chief town and military headquarters of Russian Central Asia. This projected line would be built by Barnaul, Semipalatinsk, and Verny, and it would be the shortest line of communication between Siberia and Russian Central Asia. Mr. Yugovitch has offered to construct the line by raising private capital, and without any support on the part of the Russian Government. The line would be taken in a northeast direction from Tashkend, and it would run for a long distance more or less parallel to the western frontier of China, passing between Lake Balkash and Kuldja.

BOOKS RECEIVED.

In sending books for notices, will publishers, for their own sake and for that of book buyers, give the retail prices. These notices do not supersede review in a subsequent issue of the ENGINEERING AND MINING JOURNAL.

The Wet Concentration of Broken Hill Sulphide Ores. By J. C. Moulden. Broken Hill, N. S. W.; printed for the Author. Pamphlet. Pages, 16.

Notes on Lead Ores, Their Distribution and Properties. By James Fairie. London, England; Scott, Greenwood & Company. Pages, 64. Price, $1.

New South Wales Statistical Register, 1900. Parts VIII. and XII. Compiled by T. A. Coghlan, Government Statistician. Sydney, N. S. W.; Government Printer. Pages, 32 and 36.

Copper Mining in Japan. By E. W. Nardin. Paper read before the Sydney University Engineering Society. Sydney, N. S. W.; published for the Society. Pamphlet. Pages, 8; illustrated.

Revision of Our Mining Laws. By Hon. W. B. Heyburn. Address delivered before the International Mining Congress at Boise, Idaho. Spokane, Wash.; printed for the Author. Pamphlet. Pages, 20.

Prospecting for Gold. Hand-Book of Practical Information and Hints for Prospectors. By Daniel J. Rankin. London, England; Crosby Lockwood & Son. Pocketbook form, 184 pages; illustrated. Price (in New York), $3.

Engineering Periodicals and the Card Index. By H. Wade Hibbard. Address before the Society of Mechanical Engineers of Sibley College, Cornell University. Ithaca, N. Y.; published for the Society. Pamphlet. Pages, 12.

Statistique des Mines, Minieres, Carrieres, Usines Metallurgigues et Appareils de Vapeur, Royaume de Belgique pour l'Année 1900. By Emil Harzé, Director General of Mines. Brussels, Belgium; L. Narcisse. Pages, 96; with plates.

Sixteenth, Seventeenth and Eighteenth Annual Reports on the Coal Mines in the State of West Virginia. For the Years Ending June 30, 1898, 1899 *and* 1900. By James W. Paul, Chief Inspector. Charleston, W. Va.; printed for the State. Pages 400.

NEW PUBLICATIONS.

Die Chemische Untersuchung der Grubenwetter. By Dr. Otto Brunck. Freiberg, Germany; Craz & Gerlach. Pages, 96; illustrated. Price (in New York), $1.

The chemical analysis of the air in mines is a subject to which much more attention might be given. Of the dangers to which miners are exposed the most dreaded of all is probably that due to bad ventilation. In coal mining it is imperative that careful examinations of the "weather" in tunnels and working places be made from time to time, and a good laboratory for gas analysis should be found in the vicinity of every mine. Mining men will welcome the handy little book of Dr. Otto Brunck, which shows in a clear and comprehensive manner the simple methods of determining the constituents of the atmosphere in mines.

A brief description of the most commonly occurring gases is given, their properties, modes of detection, likely places to find them, and the danger accruing from their presence; followed by a few hints on sampling, and the means of keeping same for subsequent analysis. Part 3 deals with the determination of the important gases, and the methods of Hemple and Winkler are gone into at some length. A very interesting method of finding the percentage of dust carried in the air of coal mines is described. The book concludes with a description of a laboratory and the necessary apparatus for carrying out gas analysis.

The Production of Precious Stones in 1900. By George F. Kunz. Extract from the *Twenty-second Annual Report* of the United States Geological Survey. Washington; Government Printing Office, 1901. Pages, 62.

One of the good features of the work of the United States Geological Survey is the issue in pamphlet form of the separate monographs as soon as they have been prepared without holding up all the sections for publication in one complete volume. In this way the value of the Survey's work is greatly enhanced as the information is given to the public without delay.

In the pamphlet under review, Mr. Kunz has summarized in a succinct manner the principal features of the precious stone industry in the United States during 1900 as follows:

"The continued mining of the fine blue sapphires in Fergus County, Mont.; the development of the fancy-colored sapphires in Granite County, Mont.; the systematic working of the beryl deposits in Mitchell County, Mont.; the increased output of the turquoise from Nevada and from Grant and Santa Fe counties, N. M.; the great sale of the turquoise cut with the rock under the name of turquoise matrix from all localities; the cutting and selling of the western North Carolina emerald with its gangue under the name of emerald matrix; the mining of the purple-pink garnets in Macon County, N. C.; the discovery of colored tourmalines at a new locality in California; the further advance in the price of diamonds; the continued popularity and demand for pearls, emeralds, and rubies; the importation of nearly $4,000,000 worth of rough diamonds, that were all cut in this country; the stability of the diamond-cutting industry in the United States, even with the limited output of the South African mines; the continued importation and sale of the Queensland and New South Wales opals, and their cutting from the rough in the United States; and the presentation by J. Pierpont Morgan to the American Museum of Natural History of the great Tiffany collection of gems and precious stones shown at the Paris Exposition of 1900 and the Clarence S. Bement collection of minerals, many specimens of the latter collection being gem minerals of great beauty in their natural state."

Under the caption "Diamond" is described the recent discoveries at Gold Creek, Morgan County, Ind., where an octatredral stone of 4.75 carats was found; at Knoxville, Tenn., where two diamonds were found one of 3 and the other of 1.13 carats; and near Birmingham, Shelby county, where a stone of 4.25 carats was discovered. The report of the De Beers Consolidated Mines for the fiscal year ending June 30, 1900, is quoted quite extensively, and it is shown that while the production from these mines was but half that of the preceding year, the increased value served in a measure to offset this loss. A note of importance to mining inquiries is the reference to the use of the diamond drill as described by G. A. Denny in his book on "Diamond Drilling," which appeared in 1900. From this is quoted the greater excellence of the black carbonados of Brazil which combine an amorphous structure with excellent hardness.

South African bort is sometimes used for boring by hand drill in coal formations, but it is valueless in hard rocks or where steam drill is run at a rapid rate, as its crystalline form renders it liable to "fly off." The method of setting carbons in the drill is included in the reference together with the wear of the carbons and the cost per foot of drilling. The section concludes with a description of the new American machine for cleaning diamonds promises to be of valuable aid in the preliminary work of diamond-cutting.

The section devoted to corundum gems briefly describes the mining of sapphires and rubies in Montana and gives in detail the production of ruby from the Burma mines, which furnish one-half of the total output of rubies in the world.

Under "Emerald" is included a description of the attractive stone which has been brought forward under the name of "emerald matrix." The deposit is at Big Crabtree Mountain, Mitchell County, N. C., and while the small crystals are not transparent, when the mass is cut and polished a very pleasing effect of green and white is produced. The emerald mines of Colombia are described and an abstract is given of McAlister's paper in the *Geological Journal,* November, 1900, on the ancient emerald mines of upper Egypt.

Topaz, garnet, tourmaline, quartz, opal, turquoise, nephrite, jade, thomsonite, sodalite, chiastolite, obsidian, and pyrite are taken up in order and briefly discussed, followed by a description of the minerals exhibited at the Paris Exposition of 1900.

The report concludes with a table of the production and importation of precious stones in the United States for the years 1896 to 1900.

Copies of this important monograph may be obtained by application to the director of the United State Geological Survey at Washington, D. C.

J. S.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

A Placer Mining Device in Georgia.

Sir: I would like to bring to your notice a device used in placer mining in Georgia, the method being applied to recover gold in a small way. The box shown in the photograph is filled with water, and submerged in it is a miner's pan perforated in the bottom and at the sides. The gravel is thrown in the flume with some water, and then forced down until it falls into the pan. There is a bar running through the centre of the pan, and held firmly by bolts. This bar is supported as shown in the cut, and the operator gives it a shaping movement, causing the clay, etc., to disintegrate, the gold and fine sand running through into the receptacle, which, in this case is simply a large, deep tin pail. After working for a long while, the concentrates are run through a small hand placer machine, and the gold received. This

device saves much water, and if any gold is thrown out it falls into the wooden tank and can be recovered later on.

It seems rather strange that people rush to the Klondike for gold, enduring all kinds of hardships, when about 24 hours from New York there is being developed a placer, in which recent pannings showed from $2 per cubic yard of gravel, the gold being very coarse.

Of course, mining people have heard of and know that gold exists in the South, but the layman seems

A GEORGIA GOLD WASHER.

very much surprised when gold is shown him as coming from Georgia.

The device described seems a novel way of working a placer on a small scale and no doubt would interest many of your readers. This machine was rigged up at Buchanan, Ga., under the direction of Mr. C. F. Durr, who is developing a placer there for northern parties. PLACER MINER.

Dahlonega, Ga., Nov. 25, 1901.

QUESTIONS AND ANSWERS

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preferences will, of course, always be given to questions submitted by subscribers. Books referred to in this column can be obtained from the Book Department of the ENGINEERING AND MINING JOURNAL).

Parting Platinum and Gold.—Can you refer me to any process of treatment by which platinum can be separated from gold, both metals being saved?—L. W. T.

Answer.—Various methods of separating gold and platinum are used, the choice of that best suited to any particular case depending chiefly upon the nature of the alloy and the relative proportions of the metals contained. A description of the methods in commercial use was given by Mr. Titus Ulke, in the *Mineral Industry,* Volume IV., pages 359-361.

Cast Iron Borings.—Is there any way to dispose of cast iron borings to advantage? Can they be melted in any way without great loss, or is there any way in which they can be charged in a cupola with advantage?—H. S.

Answer.—A small quantity of borings can be used with scrap iron and pig iron in the cupola. When they can be used best depends upon the kind of iron which is being run and the description of castings to be made. The proportion, however, is not large at any time, and foundry foremen do not look upon them with favor.

Manganese Binoxide.—In the ENGINEERING AND MINING JOURNAL you give quotations for manganese binoxide of high grade—80 per cent and over—at so much per pound, in large lots. Can you tell me whether this ore is sold in lumps, moderately fine, or very fine?—R. W. L.

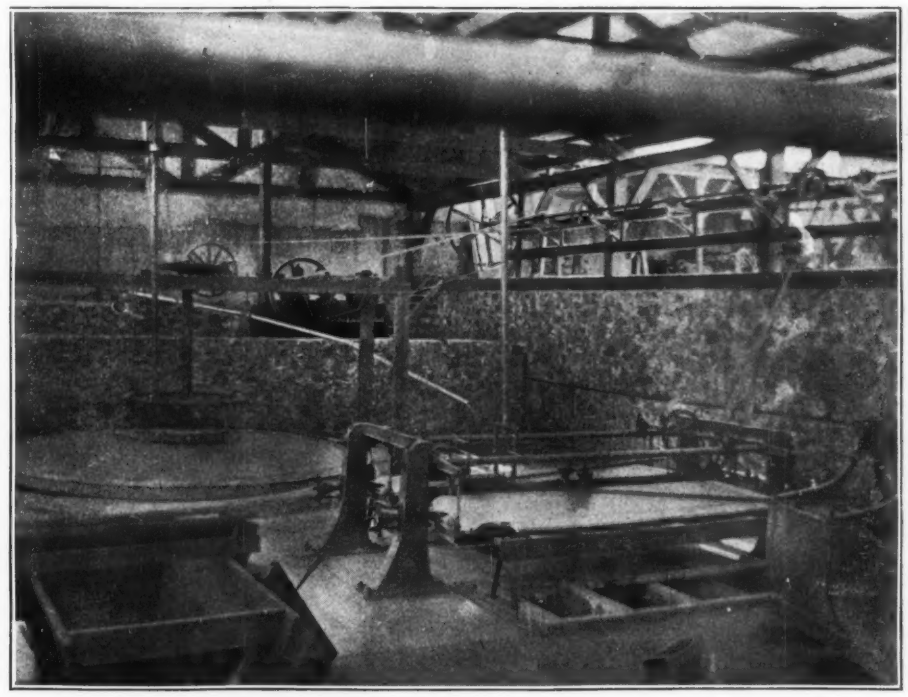
Answer.—Manganese binoxide, high grade, is usually sold "powered"; that is, crushed to a moderate degree of fineness. Recently there has been a special demand for small lumps, which are used in making a special form of battery. This demand is very small, however, and is not sufficient to affect the general trade requirements for powdered ore.

Electric Railroad Systems.—Will you please state in the columns of your JOURNAL whether the city of St. Louis, Mo., has a better, more complete and up-to-date electric street railroad system than Boston, Mass.?—S. R.

Answer.—This question is a little out of our line, but we may say that Boston is believed to have an electric railroad system which is as nearly complete and up-to-date as that of any city in the United States. The Boston system is generally considered to be far ahead of the St. Louis street lines, some of which are older and less completely equipped. The Boston roads are under one management, which is in some respects an advantage, so far as operation goes.

Wolfram or Tungsten Ore.—What are the principal uses of wolfram or tungsten ore? What is the market price and the demand? Is there any market for the raw ore? What percentage of tungsten must it contain? Who are the parties reducing such ores? Will they allow for gold or silver in the ore?—F. B. R.

Answer.—Tungsten is used chiefly in making steel. The demand is not large; only 220 tons were sold in the United States in 1900. It is probable that a large supply put upon the market would cause a fall in price. The average price of high grade ore—60 per cent tungstic acid—last year was about $160 per ton. No general quotations can be given, as there are few buyers, and the ore is usually sold on assay and on private terms. There are only two firms in the United States treating the ore, and making metallic tungsten and ferro-tungsten—the Primos Chemical Company, of Primos, Pa., and Ash & Deninger, of Phœnixville, Pa.



MILL AT PARRAL, MEXICO, EQUIPPED BY FRIED. KRUPP GRUSONWERK.

FRIED. KRUPP GRUSONWERK'S BALL MILLS.

Mining men can scarcely help being interested in the results of some tests made with the Fried. Krupp Grusonwerk patent ball mill, which show the advantages possessed by this method of ore treatment. The manufacturers claim that these mills are capable of reducing to a fine sand or powder all kinds of metallic ore, no matter how hard or tenacious they may be. The mills are built in eleven different sizes and styles.

The accompanying illustration shows two of these mills in operation, and from this the reader will readily see the method employed. The revolving drum contains a number of specially forged steel balls of different sizes. The friction and pressure produced by the slow revolutions of the cylinder disintegrates the material to any desired degree of fineness. The fineness and also the capacity of the machine is regulated by the size of the screen mesh. The mill is fed from the side, and the material is discharged from the bottom, both feed and discharge being automatic.

These ball mills are constructed for both wet and dry crushing, and it is claimed that in amount of output and economy of operation these mills are superior to the stamp battery.

The advantages claimed for the Fried. Krupp Grusonwerk patent ball mills may be briefly summed up as follows: Continuous feed and discharge; admission of material having a diameter of up to 6 inches, according to size of mill; operation without interruptions of any character; product coarse, medium or fine, according to the screens employed; immediate and automatic discharge of the product of any fineness desired; reduction of the hardest minerals to any degree of fineness; minimum amount of wear and tear and easy substitution of working parts when completely worn out; facility of access to interior of grinding drum; little attention necessary when running; inexpensive installation; remarkable uniformity of product; high capacity with moderate requirements as regards driving power.

A 5-stamp battery with a stamp weight of 525 kilograms (about 1,165 pounds), falling 160 millimeters (about 6½ inches), with 92 drops per minute, crushes approximately 780 kilograms (about 1,720 pounds) of hard quartz per hour through a No. 40 screen (1,600 meshes to the square inch), requiring a motive power of 12½ h. p. A Fried. Krupp Grusonwerk patent ball mill No. 3 for wet crushing, with 450 kilograms of special Krupp steel balls, will pass 1,200 kilograms or about 2,650 pounds, of the same quartz through the same screen per hour, using only 9 h. p. A mill as above, but for dry crushing, grinds 800 kilograms, or about 1,770 pounds, per hour under same conditions, and requires 8 h. p., and if necessary 2 h. p. extra for the exhauster, which separates the dust from the sands.

Screen tests have given the following results:

Screen ..... No.	40-60	60-80	80-90	90-100	100-150	150 and above.
	%	%	%	%	%	%
Test from the battery.....	6.5	10.5	2	11	13.5	56.5
Test from the ball mill for wet crushing	32.6	12.0	1.5	10	9.3	33.8
Test from the ball mill for dry crushing	29.6	12.3	1.6	9	47.5	....

By grinding with ball mill for dry crushing and employing the exhauster for separating the dust from the sands, the following results were obtained:

48.3 per cent of coarse sands without dust.
24.9 per cent fine sands in dust chamber No. 1.
7.3 per cent of fine sands in dust chamber No. 2.
13.6 per cent of mixture of fine sands and dust in dust chamber No. 3.
0.9 per cent of dust in dust chamber No. 4.
2.9 of dust in dust chamber No. 5.
0.3 per cent of dust in dust chamber No. 6.
0.9 per cent of dust in dust chamber No. 7.
0.9 per cent of dust in dust chamber No. 8.

These results were obtained in tests made with Inguaran ores:

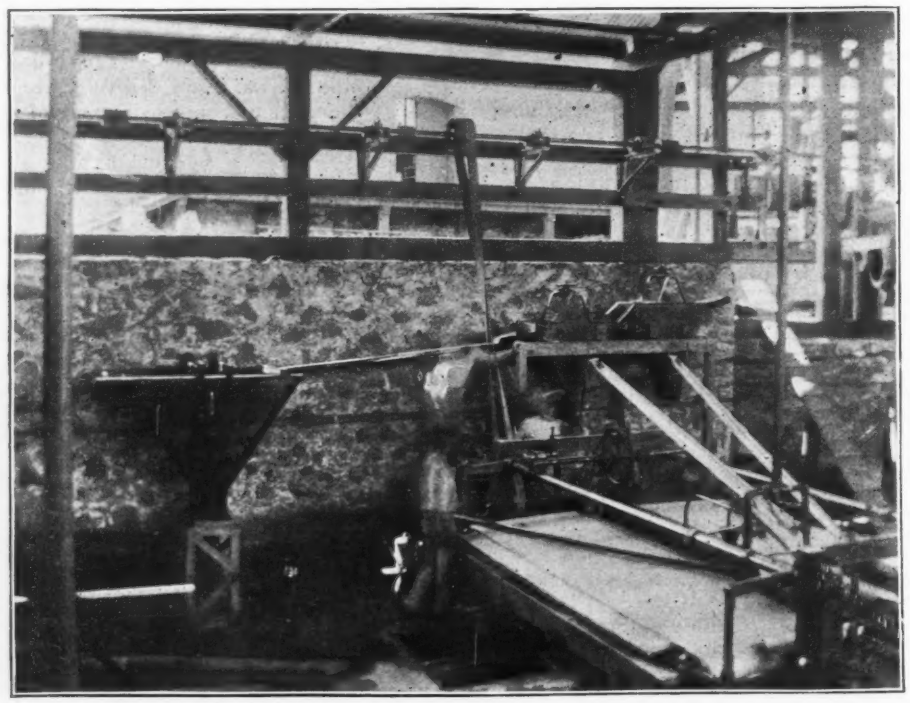
The ores were crushed in a ball mill for wet crushing with No. 20 screening, and of the product obtained 70 per cent could be concentrated in jigs, 20 per cent on percussion tables, while only 10 per cent of the product resulted in slimes, which were concentrated on round tables.

From a test of antimony ores, reduced in the ball mill for wet crushing and passed through No. 10 screens, the following results were obtained:

Screens No. 10 to 20, 50 per cent of the product.
Screens No. 20 to 30, 16 per cent of the product.
Screens No. 30 to 50, 11.5 per cent of the product.
Screens No. 50 to 100, 11. per cent of the product.
Screens above 100, 11.5 per cent of the product.

The capacity of ball mill No. 3 in this case was 2,300 kilograms per hour. It should be observed that mill No. 3 is one of the smaller sizes, ball mills running upwards to No. 8, being built. It should also be stated that the results shown above are not to be considered as being altogether representative, as better results are being obtained every day. For instance, two No. 5 dry crushing ball mills of the Fried. Krupp Grusonwerk patent were put in service recently in the State of Mexico, and each mill is yielding an output of over 76 metric tons per day of 24 hours, the material passing through No. 30 screens. The capacities of ball mills naturally depend largely upon the class of ores with which one has to deal, although the output is, in every case very satisfactory, be the ore ever so unfavorable an ore.

There is no doubt that the Fried. Krupp Grusonwerk patent ball mill for wet crushing gives excellent results for crushing ores for concentration or other treatment, and deserves a high place among machines of its class.



MILL AT PARRAL, MEXICO, EQUIPPED BY FRIED. KRUPP GRUSONWERK.

A TESTING LABORATORY IN MEXICO.

At the recent meeting of the American Institute of Mining Engineers, in the City of Mexico, an invitation was extended to the members and visitors by the firm of Heckelmann & McCann, who have in operation in the suburbs of Mexico City ore testing and sampling works, to visit their plant and witness a concentration test on a low-grade silver-gold ore from La Esmeralda Mine, Pachuca. Quite a number of the engineers availed themselves of this opportunity to observe the process of concentrating Mexican ores with American machinery.

In this plant, which is equipped with modern machinery for testing ores on a practical working scale by the usual processes of pan and plate amalgamation, lixiviation, chlorination, roasting and concentration, there are in use two concentrating tables, of the regular size, one being the Triumph rubber belt machine and the other the New Standard, a new invention of the bump, or percussion type recently introduced in Mexico. Both are California machines. Tests are run on both tables at different times, to determine the one more suitable to the ore in question.

At the time of the exhibition run, the new standard table was in operation, and as some of the visiting engineers expressed a desire to learn the final results obtained, the owners of the mines from which the ore was taken have given permission to have the results published, which are herewith appended.

The ore was crushed in a Hendy triple-discharge, 2-stamp battery, then passed from the mortar through 40-mesh brass screens, and the pulp conveyed directly to the concentrator. The ore and resulting products assayed as follows:

BATTERY SAMPLE.

Silver, 0.674 kgs per metric ton = 20 oz. troy per ton.
Gold, 3 grms., per metric ton = 0.1 oz. troy per ton.
Silica, 90.6 per cent.
Iron, 2.2 per cent.
Lime, 1.6 per cent.
Sulphur, 2.7 per cent.
Zinc, 0.7 per cent.
Lead, 0.4 per cent.
Value per ton of original ore, $31.16.

CONCENTRATES.

Silver, 8.480 kgs. per metric ton = 248 oz. troy per ton.
Gold, 27 grms. per metric ton = 0.8 oz. troy per ton.
Lead, 1.3 per cent.
Copper, trace.
Silica, 11.4 per cent.
Iron, 39. per cent.
Lime, 0.3 per cent.
Sulphur, 40.6 per cent.
Zinc, 3. per cent
Value per ton of concentrates, $377.

TAILINGS (*from table*).

Silver, 0.474 kgs. per metric ton = 13.8 ozs. troy per ton.
Gold, 2.3 grms. per metric ton = 0.06 oz. troy per ton.
Lead, trace.
Silica, 92.5 per cent.
Iron, 1.2 per cent.
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Zinc, 0.4 per cent.

After weighing the resulting concentrates and tailings, it was found that a concentration of 40 into 1 was obtained. An examination of the tailings showed that all the sulphides of iron and lead had been extracted by concentration, but a certain quantity of silver remained in the hard quartz particles of the gangue, so that no concentrating machine could effect their separation, and to successfully extract these values it became necessary to subject the tailings to a subsequent treatment by pan-amalgamation.

This treatment yielded a resulting tailings carrying 0.093 kilos silver and 0.6 grm. gold per 1,000 kilos, showing a total extraction of 86 per cent of the silver and 80 per cent. of the gold contents by the combination process of concentration and pan-amalgamation.

Concentrates, such as these obtained by this test, consisting mainly of iron pyrites, find a ready market in Mexico, and are generally sold to ore buyers or to the smelters. If the place of production is too far from the railway the precious metals are extracted at the mines by preliminary roasting and subsequent chlorination or cyanidation. There are a large number of mines in Mexico, where low-grade

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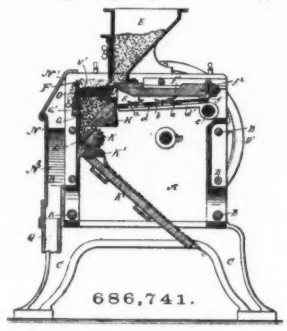

bed tubes at their ends adjacent to the bellows, of hoppers for the lighter materials to pass through, discharge-pipes therefrom, a hinged flap connected to the said hoppers, said flap having a lip at right angles thereto extending horizontally above the dam to form a mouth for the lighter materials to pass into the hopper, the said pipes extending from the bottom of the hoppers to convey away the lighter materials.

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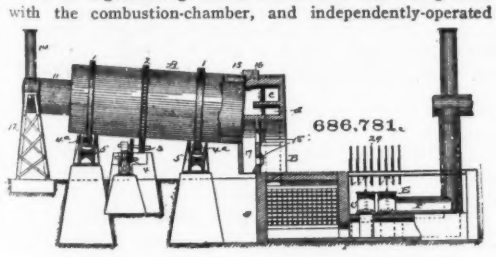

valves for controlling the passage of air and gas through a portion of the regenerating-chambers to the combustion-chamber and for controlling the passage of products of combustion from the combustion chamber through the remaining regenerating-chambers, whereby certain valves can be closed to stop the flow of gas some minutes before reversing from one to the other set of regenerating-chambers is effected so that remaining gas in the first regenerating-chambers will be burned instead of escaping directly to the stack.

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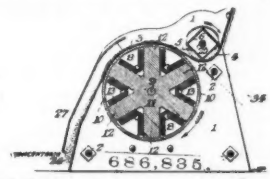
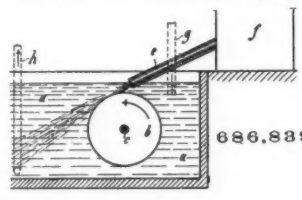


energize said field and thereby induce progression of the magnetic particles of said material in a direction opposite to the direction of rotation of said field; and means arranged to progress the gangue in a direction parallel with the axis of rotation of said field, and aside from the path of the magnetic particles.

686,836. ELECTRIC FURNACE.—Marcus Ruthenburg, Philadelphia, Pa. The combination with an electric circuit, arranged to fuse the material treated, of opposed tubular electrodes for said fusing-circuit, means to supply the material to be treated through said electrodes, an electric circuit arranged to magnetize the material treated at the fusing region, and means to positively progress said material through the furnace.

686,839. PROCESS OF MAKING GRANULATED CAST-IRON.—Carl C. G. R. Bachmann, Leipsic, Germany. The

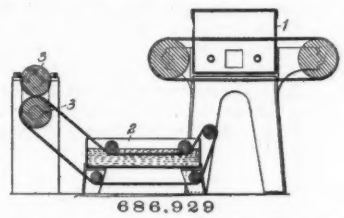


process consists in running the molten iron into water and then separating the metallic particles by centrifugal action.

686,889.—MAGNETIC SEPARATOR.—Herbert M. Daggett, Philadelphia, Pa. A frame supporting three parallel shafts, means for rotating the shafts, a disk or annulus carried by one of the shafts, two disks or annuluses carried by the other said shafts and overlapping the first said disk or annulus, and a plurality of electromagnets, having poles provided with sharp edges, which edges lie closely above the overlapping portions of the said overlapping disks or annuluses, and in lines tangential to the lines of movement of the disk or annulus immediately under them.

686,915. TREATMENT OF ZINC ORES.—Henri M. Taquet, Argenteuil, France. The process consists in first subjecting a solution containing sulphate and chloride of zinc to the action of an alkaline-earth metal and thereby obtaining by precipitation an artificial product composed of oxide of zinc and sulphate of the alkaline-earth metal and then subjecting this product mixed with carbon to heat and thereby obtaining at one and the same operation metallic zinc and a residue of alkaline-earth-metal sulphid.

686,929. METHOD OF SEPARATING LAMINAE OF MICA.—Richard W. Heard and Richard A. L. Snyder, Pittsburg, Pa., assignors to the Mica Machine Company,



Pittsburg, Pa. The method consists in preliminary releasing or lessening the bond or force which naturally unites the adjacent sheets or laminæ of mica, and then subjecting the same to the action of suitable fluid.

686,930. PROCESS OF BUILDING UP SHEETS OF MICA.—Richard W. Heard and Richard A. L. Snyder, Pittsburg, Pa., assignors to the Mica Machine Company, Pittsburg, Pa., a corporation. The method described, which consists in applying a binder to a surface, so causing scales or sheets of mica to traverse the prepared surface, whereby scales or sheets will be distributed with approximate uniformity over the surface and the non-adherent scales or sheets removed, and then transferring the film from the surface on which it was formed to another surface.

686,947. METHOD OF MAKING CARBONATE OF MAGNESIA.—William Marsh, Manchester, England. A process of producing carbonate of magnesia, consisting in adding water to magnesia compound, adding to said mixture a substance capable of causing the mixture to retain carbonic acid, and finally subjecting the resulting mixture to the action of carbonic acid under pressure.

686,949. METHOD OF MAKING CYANIDES.—Johannes Pfleger, Frankfort-on-the-Main, Germany, assignor to the firm of Deutsche Gold & Silber-Scheide-Anstalt, vorm. Roessler, Frankfort-on-the-main, Germany. The process consists in first reacting alkali metal with carbonaceous substances and ammonia while maitaining the temperature at about 350° to 600° C., whereby cyanamide is formed, and then reacting the produced cyanamide with a further quantity of carbonaceous substances at a temperature of substantially 750° to 800° C., whereby cyanide is formed.

687,011. METHOD OF MANUFACTURING ARTIFICIAL STONE.—Louis A. Garchey, Paris, France. A method for manufacturing artificial stone for obtaining products of uniform appearance, which consists in placing crushed material of different grades in uniform layers in a graduating manner within a mold mounted upon an incandescent support, and then suitably heating the said material.

687,027. MINE-CAR WHEEL.—Franklin C. Hockensmith, Pittsburg, Pa. A wheel-hub having an exterior oil-chamber, and an auxiliary chamber or pocket opening at its inner end into the said oil-chamber and wider at said open end than at its outer end.

687,029. METHOD OF MANUFACTURING STEEL.—William B. Hughes, Philadelphia, Pa. The method consists in providing the hearth of the furnace with a bath of molten iron, premelting, outside of the furnace, oxide of iron and mixing said molten oxide with lime to form thereby a highly-oxidizing liquid basic slag, bringing such molten slag into contact with the bath of molten iron on the hearth of the furnace so as to remove impurities from the iron, then withdrawing so much of the impurity-containing slag as may be necessary to permit of the rapid heating of the metal, and then reducing the carbon to the desired percentage and raising the temperature of the metal to the tapping-point.

687,053 MAGNETIC SEPARATOR.—Robert McKnight, Philadelphia, Pa., assignor to Metallic Condense Company, a corporation of Delaware. The combination with an upwardly-traveling belt having a straight inclined surface of considerable extent, of a series of magnets situated behind said inclined portion of said belt and traveling upward with the same, and means for feeding the material to be separated near the top of the inclined surface, and mechanism for separating said belt from said magnets after the belt has attained the top of the incline.

687,079 and 687,080. PRODUCTION OF ARTIFICIAL STONE FROM LIMESTONE.—Thomas M. Thom, Wood Green, England. A process of producing blocks or slabs of artificial lithographic stone, which consists in calcining limestone in a kiln from which air is excluded, by burning in contact with said stone carbonic oxide and hydrogen with oxygen, thereby producing chemically-pure caustic lime and an excess of pure carbonic-acid gas composed of that which is eliminated from the limestone and that which is the product of combustion of said gases, storing such pure gas, slaking and subsequently molding said caustic lime into blocks or slabs, and indurating them by impregnation under pressure with said carbonic-acid gas.

687,085. MANUFACTURE OF BLOCKS, BRIQUETTES, OR THE LIKE.—Ernest Grainer, Bochum, Germany. A method which consists in first evaporating the waste lyes to a dry condition, then pulverizing the same, then mixing the powdered lye with the material which is to form the body of the briquettes, and finally forming the mixture into blocks and subjecting it to sufficient heat to cause its particles to adhere to each other.

GREAT BRITAIN.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy.

Week Ending November 2, 1901.

12,395 of 1900. SHAKING TABLE.—W. Smethurst, Dolgelley. An improved vibrating table with quick forward motion and slow return.

18,397 of 1900. CATHODES.—J. D. Gilmour, Glasgow. Improvements in the mercury cathode used in the electrolysis of salt.

19,029 of 1900. CHROMIUM ELECTROLYSIS.—C. Schneider, London. Method of electrolytic oxidation of solutions of chromium salts.

20,351 of 1900. PEAT DRYING.—J. Westaway, London. Plant for removing the moisture from peat used for fuel.

22,389 of 1900. GOLD SAVING FROM SEA-WATER.—J. F. Duke, London. Method of settling the gold reduced from sea-water.

22,406 of 1900. CATHODE.—J. Greenwood, London. Improved mercury cathode used in the electrolysis of salt.

17,639 of 1901. HARDENING IRON.—F. C. Crean, Montreal, Canada. Use of black sand or magnetite to add to molten iron in order to increase the hardness.

Screen tests have given the following results:

Screen ..... No. and above.	40-60	60-80	80-90	90-100	100-150	150
	%	%	%	%	%	%
Test from the battery.....	6.5	10.5	2	11	13.5	56.5
Test from the ball mill for wet crushing	32.6	12.0	1.5	10	9.3	33.8
Test from the ball mill for dry crushing	29.6	12.3	1.6	9	47.5	....

By grinding with ball mill for dry crushing and employing the exhauster for separating the dust from the sands, the following results were obtained:

48.3 per cent of coarse sands without dust.
24.9 per cent fine sands in dust chamber No. 1.
7.3 per cent of fine sands in dust chamber No. 2.
13.6 per cent of mixture of fine sands and dust in dust chamber No. 3.
0.9 per cent of dust in dust chamber No. 4.
2.9 of dust in dust chamber No. 5.
0.3 per cent of dust in dust chamber No. 6.
0.9 per cent of dust in dust chamber No. 7.
0.9 per cent of dust in dust chamber No. 8.

These results were obtained in tests made with Inguaran ores:

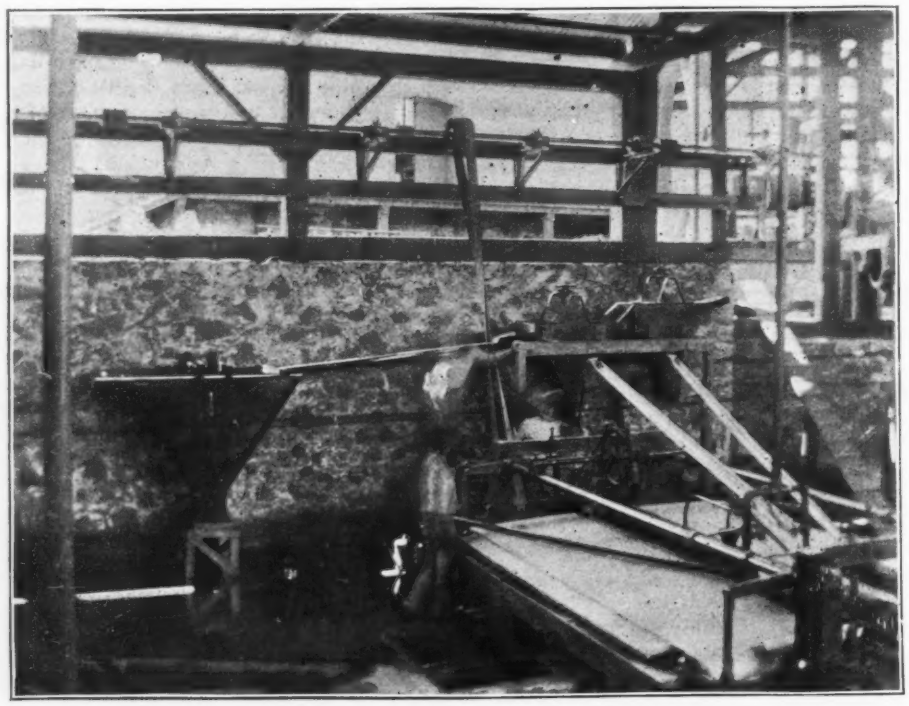
The ores were crushed in a ball mill for wet crushing with No. 20 screening, and of the product obtained 70 per cent could be concentrated in jigs, 20 per cent on percussion tables, while only 10 per cent of the product resulted in slimes, which were concentrated on round tables.

From a test of antimony ores, reduced in the ball mill for wet crushing and passed through No. 10 screens, the following results were obtained:

Screens No. 10 to 20, 50 per cent of the product.
Screens No. 20 to 30, 16 per cent of the product.
Screens No. 30 to 50, 11.5 per cent of the product.
Screens No. 50 to 100, 11. per cent of the product.
Screens above 100, 11.5 per cent of the product.

The capacity of ball mill No. 3 in this case was 2,300 kilograms per hour. It should be observed that mill No. 3 is one of the smaller sizes, ball mills running upwards to No. 8, being built. It should also be stated that the results shown above are not to be considered as being altogether representative, as better results are being obtained every day. For instance, two No. 5 dry crushing ball mills of the Fried. Krupp Grusonwerk patent were put in service recently in the State of Mexico, and each mill is yielding an output of over 76 metric tons per day of 24 hours, the material passing through No. 30 screens. The capacities of ball mills naturally depend largely upon the class of ores with which one has to deal, although the output is, in every case very satisfactory, be the ore ever so unfavorable an ore.

There is no doubt that the Fried. Krupp Grusonwerk patent ball mill for wet crushing gives excellent results for crushing ores for concentration or other treatment, and deserves a high place among machines of its class.



MILL AT PARRAL, MEXICO, EQUIPPED BY FRIED. KRUPP GRUSONWERK.

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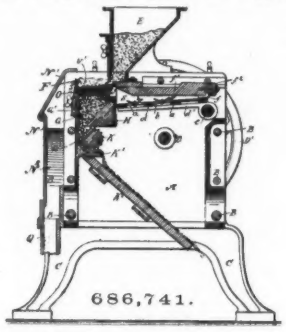

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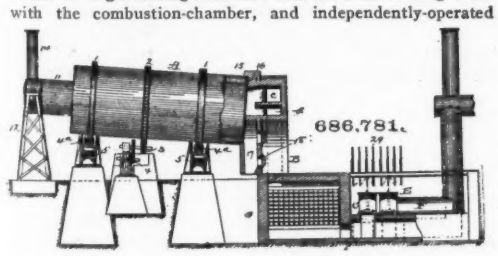

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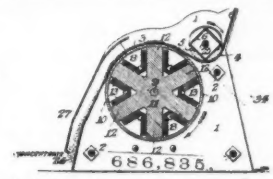
686,813. GAS PURIFYING BOX.—Waldo A. Learned, Watertown, Mass. A gas-purifying box having two superimposed beds of purifying material, a central chamber between said beds, and separate chambers at the top and bottom of the box.

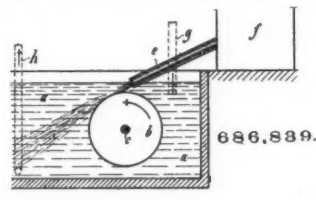
686,835. MAGNETIC SEPARATOR FOR ORE OR CONCENTRATES.—Marcus Ruthenburg, Philadelphia, Pa. The combination with a rotatable magnetic field of a support for the material treated independent of said field; means to rotate said field with respect to said support; means to



energize said field and thereby induce progression of the magnetic particles of said material in a direction opposite to the direction of rotation of said field; and means arranged to progress the gangue in a direction parallel with the axis of rotation of said field, and aside from the path of the magnetic particles.

686,836. ELECTRIC FURNACE.—Marcus Ruthenburg, Philadelphia, Pa. The combination with an electric circuit, arranged to fuse the material treated, of opposed tubular electrodes for said fusing-circuit, means to supply the material to be treated through said electrodes, an electric circuit arranged to magnetize the material treated at the fusing region, and means to positively progress said material through the furnace.

686,839. PROCESS OF MAKING GRANULATED CAST-IRON.—Carl C. G. R. Bachmann, Leipsic, Germany. The

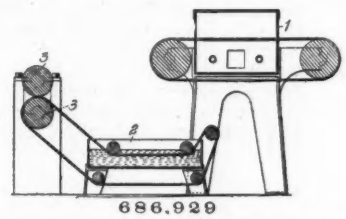


process consists in running the molten iron into water and then separating the metallic particles by centrifugal action.

686,889.—MAGNETIC SEPARATOR.—Herbert M. Daggett, Philadelphia, Pa. A frame supporting three parallel shafts, means for rotating the shafts, a disk or annulus carried by one of the shafts, two disks or annuluses carried by the other said shafts and overlapping the first said disk or annulus, and a plurality of electromagnets, having poles provided with sharp edges, which edges lie closely above the overlapping portions of the said overlapping disks or annuluses, and in lines tangential to the lines of movement of the disk or annulus immediately under them.

686,915. TREATMENT OF ZINC ORES.—Henri M. Taquet, Argenteuil, France. The process consists in first subjecting a solution containing sulphate and chloride of zinc to the action of an alkaline-earth metal and thereby obtaining by precipitation an artificial product composed of oxide of zinc and sulphate of the alkaline-earth metal and then subjecting this product mixed with carbon to heat and thereby obtaining at one and the same operation metallic zinc and a residue of alkaline-earth-metal sulphid.

686,929. METHOD OF SEPARATING LAMINAE OF MICA.—Richard W. Heard and Richard A. L. Snyder, Pittsburg, Pa., assignors to the Mica Machine Company,



Pittsburg, Pa. The method consists in preliminary releasing or lessening the bond or force which naturally unites the adjacent sheets or laminæ of mica, and then subjecting the same to the action of suitable fluid.

686,930. PROCESS OF BUILDING UP SHEETS OF MICA.—Richard W. Heard and Richard A. L. Snyder, Pittsburg, Pa., assignors to the Mica Machine Company, Pittsburg, Pa., a corporation. The method described, which consists in applying a binder to a surface, so causing scales or sheets of mica to traverse the prepared surface, whereby scales or sheets will be distributed with approximate uniformity over the surface and the non-adherent scales or sheets removed, and then transferring the film from the surface on which it was formed to another surface.

686,947. METHOD OF MAKING CARBONATE OF MAGNESIA.—William Marsh, Manchester, England. A process of producing carbonate of magnesia, consisting in adding water to magnesia compound, adding to said mixture a substance capable of causing the mixture to retain carbonic acid, and finally subjecting the resulting mixture to the action of carbonic acid under pressure.

686,949. METHOD OF MAKING CYANIDES.—Johannes Pfleger, Frankfort-on-the-Main, Germany, assignor to the firm of Deutsche Gold & Silber-Scheide-Anstalt, vorm. Roessler, Frankfort-on-the-main, Germany. The process consists in first reacting alkali metal with carbonaceous substances and ammonia while maitaining the temperature at about 350° to 600° C., whereby cyanamide is formed, and then reacting the produced cyanamide with a further quantity of carbonaceous substances at a temperature of substantially 750° to 800° C., whereby cyanide is formed.

687,011. METHOD OF MANUFACTURING ARTIFICIAL STONE.—Louis A. Garchey, Paris, France. A method for manufacturing artificial stone for obtaining products of uniform appearance, which consists in placing crushed material of different grades in uniform layers in a graduating manner within a mold mounted upon an incandescent support, and then suitably heating the said material.

687,027. MINE-CAR WHEEL.—Franklin C. Hockensmith, Pittsburg, Pa. A wheel-hub having an exterior oil-chamber, and an auxiliary chamber or pocket opening at its inner end into the said oil-chamber and wider at said open end than at its outer end.

687,029. METHOD OF MANUFACTURING STEEL.—William B. Hughes, Philadelphia, Pa. The method consists in providing the hearth of the furnace with a bath of molten iron, premelting, outside of the furnace, oxide of iron and mixing said molten oxide with lime to form thereby a highly-oxidizing liquid basic slag, bringing such molten slag into contact with the bath of molten iron on the hearth of the furnace so as to remove impurities from the iron, then withdrawing so much of the impurity-containing slag as may be necessary to permit of the rapid heating of the metal, and then reducing the carbon to the desired percentage and raising the temperature of the metal to the tapping-point.

687,053 MAGNETIC SEPARATOR.—Robert McKnight, Philadelphia, Pa., assignor to Metallic Condense Company, a corporation of Delaware. The combination with an upwardly-traveling belt having a straight inclined surface of considerable extent, of a series of magnets situated behind said inclined portion of said belt and traveling upward with the same, and means for feeding the material to be separated near the top of the inclined surface, and mechanism for separating said belt from said magnets after the belt has attained the top of the incline.

687,079 and 687,080. PRODUCTION OF ARTIFICIAL STONE FROM LIMESTONE.—Thomas M. Thom, Wood Green, England. A process of producing blocks or slabs of artificial lithographic stone, which consists in calcining limestone in a kiln from which air is excluded, by burning in contact with said stone carbonic oxide and hydrogen with oxygen, thereby producing chemically-pure caustic lime and an excess of pure carbonic-acid gas composed of that which is eliminated from the limestone and that which is the product of combustion of said gases, storing such pure gas, slaking and subsequently molding said caustic lime into blocks or slabs, and indurating them by impregnation under pressure with said carbonic-acid gas.

687,085. MANUFACTURE OF BLOCKS, BRIQUETTES, OR THE LIKE.—Ernest Grainer, Bochum, Germany. A method which consists in first evaporating the waste lyes to a dry condition, then pulverizing the same, then mixing the powdered lye with the material which is to form the body of the briquettes, and finally forming the mixture into blocks and subjecting it to sufficient heat to cause its particles to adhere to each other.

GREAT BRITAIN.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy.

Week Ending November 2, 1901.

12,395 of 1900. SHAKING TABLE.—W. Smethurst, Dolgelley. An improved vibrating table with quick forward motion and slow return.

18,397 of 1900. CATHODES.—J. D. Gilmour, Glasgow. Improvements in the mercury cathode used in the electrolysis of salt.

19,029 of 1900. CHROMIUM ELECTROLYSIS.—C. Schneider, London. Method of electrolytic oxidation of solutions of chromium salts.

20,351 of 1900. PEAT DRYING.—J. Westaway, London. Plant for removing the moisture from peat used for fuel.

22,389 of 1900. GOLD SAVING FROM SEA-WATER.—J. F. Duke, London. Method of settling the gold reduced from sea-water.

22,406 of 1900. CATHODE.—J. Greenwood, London. Improved mercury cathode used in the electrolysis of salt.

17,639 of 1901. HARDENING IRON.—F. C. Crean, Montreal, Canada. Use of black sand or magnetite to add to molten iron in order to increase the hardness.

PERSONAL.

Mr. W. F. Snyder returned to Salt Lake, Utah, on November 24, from the East.

Col. N. Treweek returned to Salt Lake, Utah, November 26 from Detroit, Chicago, and St. Louis.

Mr. W. A. Clark, United States Senator from Montana, returned from a trip to Europe last week.

Mr. F. C. Alsdorf, of Alma, Colo., has gone to Southern Arizona to examine properties for Eastern parties.

Mr. J. D. Huntoon, of New York City, has been superintending work at the Scramble Mine, near Rat Portage, Ont.

Mr. Walter W. Davis, vice-president of the Yak Company, of Leadville, Colo., is in the east on a business trip.

Mr. Geo. Barkley, formerly with the Detroit Copper Mining Company, has returned to Clifton, Ariz., from Mexico.

Mr. C. E. Knox, of Philadelphia, Pa., has been in Salt Lake, Utah, from Tonapah, Nev., where he is interested in mining.

Mr. Max Boehmer the well known mining engineer of Denver, Colo., was in Cripple Creek this week on professional business.

Mr. Joseph A. Coram, president of the Bingham Consolidated Mining and Smelting Company is visiting Salt Lake, Utah.

Mr. Thomas Kearns, principal owner of the great Silver King Mine, at Park City, Utah, has returned from his trip to Europe.

Mr. R. M. Jessup, who has been examining mining property near Sonora, Mex., in the interest of Eastern parties, is back in New York City.

Mr. James G. Sample, president of the El Socorro Company, of Chihuahua, Mex., has gone to Pittsburg, Pa., to remain until February 1, 1902.

Mr. D. C. Jackling, the cyanide expert, is a visitor in Salt Lake, Utah. He is to join the United States Reduction and Refining Company, of Colorado.

Mr. R. Schorr, consulting engineer for the Trinity Copper Company, of Shasta County, Cal., has resigned and is to open an office at Redding, Cal.

Mr. Charles M. Thayer, a mining investor of Boston, Mass., passed through Salt Lake, Utah, on November 26, after inspecting property in Idaho.

Mr. H. T. Windt, manager of the Slocan-Cariboo Mine, near Barkerville, B. C., has been in Toronto, Ont., to attend the annual meeting of the company.

Mr. F. Guiterman, one of the executive committee of the American Smelting and Refining Company, is in Leadville, Colo., looking over the company's plant there.

Mr. Don. H. Bacon, chairman of the board of directors of the Tennessee Coal, Iron and Railroad Company, will move his residence to Birmingham, Ala.

Mr. R. Trevarthen, of the Portland Gold Mining Company, at Victor, Colo., with other Cripple Creekers has been examining property in Gilpin County, Colo.

Mr. A. M. Hobson, store manager and paymaster for the Sloss-Sheffield Steel and Iron Company, in Alabama, has tendered his resignation, effective at once.

Mr. W. Blakemore, consulting engineer for the Canadian Pacific Railway, has been examining the holdings of the Similkameen Valley Coal Company, at Otter Flat, B. C.

Mr. H. B. Ayer, of Schenectady, N. Y., has been appointed superintendent of the Manchaster Locomotive Works, Manchester, N. H., succeeding the late Mr. James B. Henney.

Mr. W. H. Paul who has been in charge of property at Robinson near Leadville, Colo., has gone to Central City, Colo., to take charge of the property of the Mammoth Gold Mining Company.

Mr. T. E. Schwartz, for the past three years manager of the Iron Silver Mining Company, in Leadville, Colo., has resigned, and will open an office as consulting and mining engineer in Denver.

Mr. W. S. McCornick, Mr. J. E. Bamberger and Mr. J. W. Neill were scheduled to leave Salt Lake, Utah, on November 30, for New York City to consult with the lead producers at their conference.

Mr. Thomas Neilson, metallurgist and chemist, has resigned the position of mine superintendent for the Trinity Copper Company, and will open an assay office and chemical laboratory at San Francisco, Cal.

Mr. R. H. Campbell, of Harper's Camp, Cariboo, B. C., has been in San Francisco buying mining machinery recently. He will put in a complete sawmill outfit and a steamer to ply on Horsefly Lake.

Mr. Phillip Argall an old time Leadville, Colo., mining man is visiting Leadville with the view of leasing the old La Plata Company, in which he is interested. The mine is owned largely by London people.

Mr. Erik G. Edlund of Stockholm, Norway, is reported to be desirous of securing the names of American manufacturers of coal handling machinery and also catalogues of makers of all descriptions of hoisting and conveying machinery.

Mr. David Keith left Salt Lake, Utah, on November 26, for New York City to be present at the conference to be held there by the lead producers. Mr. Keith is one of the principal owners of the Silver King Mine in Park City, Utah.

Mr. Edward E. Slick, formerly chief engineer at the Edgar Thomson steel works and blast furnaces, has been made chief engineer for all the plants of the American Steel Hoop Company, and will have his offices in the Carnegie Building, Pittsburg, Pa.

Messrs. W. Durbrow and E. Krug, of Nevada City, Cal., are under engagement with a San Francisco mining syndicate to go to mines in South America. Mr. Durbrow will act as general manager, and Mr. Krug will be superintendent of one of the mines.

Mr. Philip Dawson, the electrical engineer and author of books on electrical engineering, has severed his connection with the firm of Robert W. Blackwell & Company, Limited, of London, Eng., as chief engineer and managing director, and will open an office as consulting engineer. He will report on transmission and traction propositions in Great Britain, the British colonies, or in Europe.

SOCIETIES AND TECHNICAL SCHOOLS.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—The annual convention opened in the society's rooms, in New York City on December 3, and lasted 3 days, including Friday, December 6. The opening session included the annual address by the president, Samuel T. Wellman. A paper entitled "Early History of Open Hearth Steel Manufacture in the United States" was read, following which luncheon was served, in turn succeeded by a smoker. The Wednesday's session began at 10 a. m., in the society's hall. Three papers were read, the first on the cost of running high-speed trains, the second enumerating some peculiarities of springs, and the last on the Linvolpon system of units. In the evening a reception by the president and the president-elect was given at Sherry's. A full account of the convention will appear in next week's issue of this paper.

ENGINEERS' CLUB OF PHILADELPHIA.—At the meeting on November 16 there were 71 members present.

Mr. Wm. C. Eglin presented the paper of the evening upon "The Economical Conversion and Transmission of Energy." He pointed out that the fundamental problems in mechanical engineering are concerned with the conversion and transmission of energy, and traced the development of air and water-power, steam, compressed air, and electricity. The economical features of modern power plants were considered under four heads: First, the generators or converters; second, the transmission system; third, the motors or consumption devices; and fourth, the load factor of the entire plant. The advantages of the electrical transmission of energy were pointed out, and the statement was made that by the use of modern improvements the power factor in alternating current transmission can be made between 80 and 100 per cent. The consideration of the load factor was illustrated by a series of diagrams showing the average loads of a power station for 24-hour days, part of the loads being transmitted from some other station, and "the peak" being carried by a storage battery; also diagrams from one main generating station capable of carrying the bulk of the load, with auxiliary stations operating for shorter periods.

The second communication was presented by Mr. L. Y. Schermerhorn, who described, with the aid of lantern illustrations the tide indicators, with dials nearly 30 ft. in diameter, which the United States Coast and Geodetic Survey has had in successful operation at New York, San Francisco and Delaware Bays; and also an indicator in which a small dial, electrically connected with the tidal station at any distance away, will accurately report the condition of the tide. This shows not only the height of the tide, but also whether it is rising or falling. Messrs. Carl Hering, Henry Leffmann, James Christie, and others discussed the papers.

AMERICAN ELECTRO-CHEMICAL SOCIETY.—The following circular has been issued by a committee consisting of Dr. Charles A. Doremus, Messrs. W. A. Bancroft, J. W. Richards, E. F. Roeber and C. J. Reed: "The products of electro-chemical industries in this country at the present time amount to about $100,000,000 per year. The growing importance of these industries and the fact that scientists and engineers interested in electro-chemisty are now distributed among at least half a dozen different societies, and, therefore, have no common medium of communication, suggested the formation of an American Electro-chemical Society on the same general plan as the American Chemical Society and the American Institute of Electrical Engineers. A preliminary meeting in the interest of such an organization was held November 1, 1901, at the Engineers' Club of Philadelphia, Prof. J. W. Richards, vice-president of the American Chemical Society, acting as chairman, and Mr. Carl Hering, past president of the American Institute of Electrical Engineers, as secretary. All of those present were heartily in favor of forming such a society and numerous encouraging letters were received from all parts of the country, those from representatives of the electro-chemical industries being especially favorable. It was unanimously decided that such a society should be founded as soon as a sufficient number of members could be secured to insure success. Committees were appointed to secure members and to arrange for a meeting in the near future, at which the society should be formally organized. It was the opinion of those present at the preliminary meeting that the annual dues for membership should not exceed $5 and that there should be only one class of members.

"The bringing together in this way of those engaged in the scientific study of electro-chemistry and the practical engineers and pioneers of the industry will be of inestimable value to both. The committee of membership earnestly solicits co-operation and asks electro-chemists to notify the chairman, Dr. Charles A. Doremus, 17 Lexington Avenue, New York, before December 31 that they can be depended upon to become charter members."

ENGINE BUILDERS' ASSOCIATION OF THE UNITED STATES.—The third meeting of this association was held at Sherry's New York City, December 2. The meeting opened with a short address of welcome from Vice President W. M. Taylor, of the Chandler & Taylor Company, Indianapolis, Ind., after which Prof. R. C. Carpenter, of Cornell University, read a paper on "The Evolution of the Shaft Governor," an interesting presentation of the development of this type of governor. In the discussion following, Messrs. Rites and Neiler took part.

The next paper was by Mr. H. M. Norris, on "The Premium Plan of Labor Remuneration." Mr. Norris advocated paying employees the usual day wages and an additional premium for all time saved over what the factory records have shown such an operation previously required; the rate being one-half of the wage rate. Mr. Neiler cited several cases in which large reductions in the cost of given pieces of machinery had been effected by this plan. The paper was discussed by Messrs. Wood and MacLaren, of the Ball & Wood Company, New York City; W. M. Taylor, S. N. Bagg, of the Watertown Steam Engine Company, Watertown, N. Y., and Mr. Dick, of Dick & Church.

Mr. MacLaren then read a paper on "Shop Administration," in which he pointed out the advantage of laying out a factory plant in such a manner that future growth should not divide the plant into several distinct shops. This paper was discussed briefly by Messrs. Dick, Gates and Taylor.

Mr. Geo. T. Reiss, of the Niles Tool Works, Hamilton, O., then read a paper on "Machine Shop Tools for Engine Builders," illustrated by a large number of photographs and half-tone engravings. The question of using grinding machines for finishing shafts was discussed to some extent by Messrs. Reiss, Dick, Taylor and Wood, Mr. Reiss explaining that the best method of using a grinding machine was to reduce the amount of work done by it as far as possible.

A paper entitled, "From the Consulting Engineer's Standpoint," read by Mr. Neiler, was the closing paper of the session. Mr. Neiler pointed out the excellent work that had been accomplished by the American Society of Mechanical Engineers and the American Institute of Electrical Engineers in perfecting standards of manufacture and standardizing methods of testing. He argued that a consulting engineer should not attempt to design apparatus, but should specify machinery that could be furnished by manufacturers without undue hardship, and that manufacturers should supply with their bids to consulting engineers complete data regarding their engines. He criticized the practice of many manufacturers in doing preliminary consulting engineering work for prospective purchasers without charge. In most of such cases, he said, a large amount of engineering information was given to persons who had no idea of buying. Mr. Dick, in discussing the offer of the St. Louis Exposition authorities to make elaborate tests of engines, said that the Chicago Exposition officials promised tests, and induced a large number of engine builders to go to great expense for exhibits, but that no tests were made of which anybody had ever heard anything.

At the second session on Tuesday afternoon, December 3, the entire time was given to discussing industrial conditions pertaining particularly to the engine business, and to the election of officers. The following officers were elected: W. M. Taylor, of Indianapolis, president; C. O. Gates, of Massillon, vice-president; D. N. McBrier, of Erie, secretary; C. S. Bonsell, Salem, treasurer. Two new members were

elected to succeed the retiring members, W. C. Kerr, of New York, and S. F. Bagg, of Watertown.

In the evening the annual banquet was served at Sherry's, 50 gentlemen being present. Mr. W. C. Kerr acted as toastmaster. Mr. Edmonds, of "The Manufacturers' Record," responded to the toast of "The South," and told of the great possibilities of that section. Mr. Charles Moore responding to "Reciprocity," made a forceful appeal for the retention of a high tariff, and for an improvement of the American consulate service and increased banking facilities for American merchants abroad. The Honorable Job Hedges responding to the toast of "Successful Builders" skilfully evaded the subject of the toast and delivered a thoughful address upon the political duties of the American citizen. The toastmaster then called for a few remarks from Mr. John A. Hill, of the "American Machinist"; Mr. J. M. Wakeman, of the "Street Railway Journal," and Mr. Cassier, publisher of "Cassier's Magazine."

The proceedings closed with a few carefully selected anecdotes from Mr. C. L. Eidlitz, president of the Electrical Contractors Association.

INDUSTRIAL NOTES.

The Colliery Engineering Company, of Scranton, Pa., proprietor of the International Correspondence Schools, has changed its name to International Textbook Company.

James Leffel & Company, of Springfield, O., with offices in New York City, recently secured a 35-in. horizontal turbine order through Fraser & Chalmers, Limited, of London, for shipment to the Caucasus.

The Mehlback Saddle Company, of New York City, successor to the Whitman Saddle Company, has just received from the Government an order for nearly 1,000 Whitman saddles, to be used for Philippine Island service.

The Colorado Iron Works, of Denver, Colo., is reported to have secured a contract calling for the shipment of a 30-ton copper smelting plant, to be installed in the works of the Australian Metal Company, N. S. W.

The main building of the Bradley fertilizer works at North Weymouth, Mass., was recently destroyed by fire. The loss is estimated at $100,000, fully insured. The plant was owned by the American Agricultural Chemical Company of New York City.

R. D. Wood & Co., of Philadelphia, Pa., have completed arrangements for the manufacture of Mond gas apparatus. The process uses bituminous slack or coal, and generates a producer gas used to some extent in England for heating purposes and gas engines.

The Franklin & New York Air Compressor Company is about to ship from its Franklin, Pa., plant 2 air compressors of about 500 ft. capacity to Japan, where they are intended to be used for driving pneumatic tools in connection with Government railway work.

The Waclark Wire Company, of New York City, manufacturers of copper rods and wire, recently produced at its 16-in. train of 2 set and a 10-in. train of 9 set rolls at Elizabeth, N. J., 208,000 lbs. of 3-8-in. rods in a run of 10 hours. F. J. Reeves is foreman of the mill.

The old Eagle forge, at Rowland, Pa., built in 1809, has been repaired and is in use after an idleness of 11 years. It was formerly operated for the purpose of converting the product of the Eagle furnace into charcoal blooms. The forge will be operated by a new company.

The Connellsville Machine and Car Company, of Connellsville, Pa., has shipped a large coke crusher for the H. R. Hackett Coal and Coke Company; 4 coal larries to Alabama; 2 car-loads of mine cars to J. R. Laughrey & Sons, and a mine cage for the Washington Coal and Coke Company. The company is building several large steam pumps and filling mine supply orders.

The Gold and Silver Extraction Company of America states that the Western Zinc Shaving Company has been organized in Denver, Colo., to supply zinc in the most suitable form for precipitation purposes at cyanide extraction works, and at a low price. The plant of the Western Company, which has been designed for both efficiency and capacity, is already in active operation.

The Youghiogheny Steam Pump Works, Connellsville, Pa., Boyts, Porter & Co., have shipped to the Hecla Coke Company a mine pump 30 ft. long and 10 ft. high. The water end is built entirely of bronze, and the pump is the sixth of the same size built for the Hecla Company. Each of the pumps has a daily capacity of 2,000,000 gals. Boyts, Porter & Co. are shipping daily pumps for all kinds of duty, and the works are running full capacity.

The Babcock & Wilcox Company, of New York City, has secured a contract from the Bristol, Eng., Electrical Committee for a coal-conveying plant valued at some $13,000. The machinery will be manufactured at the Scotch plant of the company. It will be of the C. W. Hunt Company type, the Babcock & Wilcox Company having recently made arrangements with the C. W. Hunt Company for building Hunt specialties for the British market.

The American Concentrator Company, of Joplin, Mo., has shipped New Century drop motion jigs as follows: Complete equipment to the Pro-Patria Mining and Milling Company, Rico, Colo.; Wallapai Mining and Development Company, Chloride, Ariz.; Contention Mining Company, Silverton, Colo.; Salt Lake Hardware Company, for use in the California Mining Company's mill, and the New Jersey Zinc Company, at Canon City, Colo.

The Pacific Portland Cement Company has about 400 acres of mineral lands on the Pend d'Oreille River, near Newport, Wash., and is to have its shipping headquarters at Northport. The manufacturing plant is to have a capacity of 200 bbls. per day, and is expected to be ready by March 1. The officers of the company are S. S. Fowler, of Nelson, B. C., president; W. H. Dowsing, of Spokane, secretary and treasurer. F. G. Jordan is general manager.

Robert W. Hunt & Co., of Chicago, Ill., are soon to make a series of tests of bituminous coals supplied to the city by the successful bidders in supplying city institutions. These firms are said to have taken the contracts at low figures, the understanding being that a good grade of coal was to be delivered. Complaint has been made of the quality of coal supplied the Dunning institutions by O'Gara, King & Co., and the city has authorized R. W. Hunt & Co. to make a series of tests on the coal. The results are awaited with interest. The coal in question is from West Virginia, and called Randolph smokeless by O'Gara, King & Co.

It is said that the Union Lead and Oil Company will attempt to begin work immediately in St. Louis, Mo., on the largest white lead manufacturing plant in the United States. Negotiations for a site are under way, and those connected with the company say the plant will be in operation within a few months. The company will have a capacity of 15,000 tons. All the raw material for the plant will be obtained in Missouri, where the company controls extensive lead mines. The company is a half owner in the Federal Lead Company,, organized recently under the laws of New Jersey, with a capital stock of $10,000,000.

A new world's record for blast furnace production was made by No. 3 furnace of the Carrie group of the Carnegie Steel Company, at Rankin, Pa., when 790 tons of basic iron were made in a 24-hour run. The No. 3 Carrie stack is 100 ft. high and 23 ft. diameter in the bosh and is equipped with 12 tuyeres. During the blast when the record was made an average pressure of 21 lbs. was maintained. The furnace worked on non-bessemer ores, running from 52 to 58 per cent in iron and 0.1 phosphorus. Casts were made every 4 hours. One cast required 10 ladles and yielded 168 tons. A total of 2,270 tons of material was charged during the 24 hours, including 1,450 tons of ores and cinder, 660 tons of coke and 160 tons of limestone. The metal was conveyed in ladles across the river to the Homestead Steel Works. The average cast netted 115 tons, and it required 1,871 lbs. of coke to make each ton of iron. George K. Hamfeldt is superintendent of the Carrie plant.

The contracts have been let for the construction of the new smelter for the Federal Lead Company east of Alton, Ill. A time limit of six months from December 1 has been set on the contractor. The new smelter is expected to be in working order by June 1, with a liberal bonus to be paid by the Federal Lead Company for every day the plant is completed in advance of that time. The cost of the new smelter will be over $450,000, according to the contract. The new plant will be constructed on the most modern and improved plans, and precautions will be taken by the use of up-to-date appliances to prevent injury to the farms surrounding the smelter from escaping fumes. When it was announced that the lead smelter was to be erected on the tract, many of the land owners east of Alton were greatly agitated lest the fumes from the smelting lead should do great damage to growing crops. The contractor will begin work within a few days preparing the ground for building operations.

Elliott C. Smith and Frank P. Holran, who recently purchased the plant and property of the Rogers Locomotive Company, at Paterson, N. J., have organized a new corporation, called the Rogers Locomotive Works, to carry on the business of the old concern. At a recent meeting of the Board of Directors, permanent officers were elected as follows: John Havron, president; E. Hope Norton, vice-president; Frank P. Holran, treasurer; George F. Hannah, secretary, and Reuben Wells, general manager, and John W. Griggs, general counsel. The directors are Sir William C. Van Horn, George B. Hopkins, George Turnure, J. D. Probst, Elliott C. Smith, Frank P. Holran, John W. Griggs, Robert C. Pruyn, E. Hope Norton, John Havron and Stephen Peabody. The executive committee is composed of John Havron, chairman; and George B. Hopkins, J. D. Probst, Elliott C. Smith, Robert C. Pruyn and Stephen Peabody. The New York office of the company will be located at 33 Wall Street, John Havron, president, is Eastern representative of the Latrobe Steel Company, and previous to 1893 was connected with the Rogers Locomotive Works.

The F. S. Royster Guano Company, of Norfolk, Va., is completing another fertilizer plant at Columbia, S. C., a convenient point for the distribution of its output. The sulphuric acid plant has all modern improvements, the pipe column system being adopted for augmenting the condensation of the gases. The present output will be 35 tons per day of 50° Be. acid. The fertilizer buildings cover a large area. The mill is equipped with the latest machinery for handling phosphate rock and other chemical ingredients cheaply, and every effort has been made to eliminate any unnecessary handling of materials. The electric motive power is furnished by the Columbia Water Power Company, from its power station on the Congaree River. The machinery is divided into different units, so that it can be operated independently. The buildings are lighted throughout with electricity. Ample trackage is provided for rapidly handling cars, necessary for the large output during the shipping season. Apparatus is being erected for the condensation of any noxious vapors produced. The plant is conveniently located for handling South Carolina, Florida or Tennessee phosphates. The ammoniates will be shipped in from the West. The acid plant is doing very satisfactory work. The fertilizer department will be in operation early in December. F. S. Royster is president, C. F. Burroughs, vice-president; P. S. Gilchrist, engineer.

The Crocker-Wheeler Company, of Ampere, N. J., states that it is being pushed to its utmost to keep up with the orders received and on hand. It is constantly adding to the number of factory hands, and for some months has been working a regular night shift. Among the shipments made during the last month are 2 520 kw. generators for the American Smelting and Refining Company, Perth Amboy, N. J., 3 400 kw. and 1 100 kw. for the Alsen Cement Plant, West Camp, N. Y.; 1 400 kw. generator for the Christensen Engineering Company, Milwaukee, Wis.; 1 300 kw. generator for the Balbach Smelting and Refining Company, Newark, N. J.; 3 200 kw. generators for the Stetson & Company's new power plant, Philadelphia; 1 400 kw. and 1 75 kw. for the Lake Shore & Michigan Southern Railroad; 1 200 kw. generator for the Vandergrift Construction Company for railroad work; 1 200 kw. generator for the Crucible Steel Company of Blair, Pa.; 1 150 kw. generator for the Latrobe Steel Company; 1 200 kw. for the Otis Elevator Company and 1 100 kw. generator for the United States Tube Company. The company has also completed the entire shipment of the 45 kw. direct connected generator and 50 or 60 motors for the Government printing office in Manila, Philippine Islands.

Among the orders recently received are noted the following: 2 300 kw. generators for the Singer Manufacturing Company, South Bend, Indiana; 4 140 kw. generators for the Fort Hill Chemical Company, Rumford Falls, Me.; 2 75 kw. generators for Henry Land & Company, Newark, N. J.; 1 90 kw. generator for the United States Electric Lighting Company, Washington, D. C. Shipment of 13 motor-dynamos for the Western Union Company's Plant at Milwaukee, and the electrical equipment of Skinner & Sethman Publishing Company's Plant, Denver, Colo., consisting of a large generator and 28 motors will be made this month.

TRADE CATALOGUES.

Series enclosed arc lamps for direct-current circuits are described in Bulletin No. 1,019, issued by the Fort Wayne Electric Works, of Fort Wayne, Ind. Bulletin No. 1,018, published by the same company, describes searchlight projectors.

Contractors and builders will be interested in a little pamphlet published by the Jeffrey Manufacturing Company, of Columbus, Ohio, describing the Jeffrey box concrete mixer. This mixer is made in 2 sizes, 4 and 5 ft. square respectively.

The American School of Correspondence is sending out circulars calling attention to the merits of the correspondence system of instruction for ambitious and industrious men and to the advantages of the American School's system of scholarship.

Drying kilns, with Sturtevant steam or hot air heating and drying apparatus are described in an illustrated 86-page catalogue published by the Sturtevant Engineering Company, of Boston, Mass. The Sturtevant Company calls attention to the economy of its methods of heating air and the merits of its fans and blowers.

Of the excellent series of illustrated pamphlets issued

by the Dean Brothers Steam Pump Works of Indianapolis, Ind., special catalogue No. 21 treats of independent air pumps condensers for stationary and marine engines, vacuum pans, etc.; refrigerating towers, jet and surface condensers. Catalogue No. 25 describes the company's pressure and speed governors for steam pumps.

Williams Bros., of Ithaca, N. Y., have published an illustrated catalogue of more than 70 kinds of well-digging machines, operated by either horse-power or steam. This catalogue the company sends free to any one interested. These machines, the company states, are so simple that any person of ordinary mechanical skill can erect them, keep them in order and operate them, either in the softest soil or through solid rock. They are mounted for traveling from field to field.

Circular No. 1,055 issued by the Westinghouse Electric and Manufacturing Company of Pittsburg, Pa., calls attention to the company's type 6 alternating-current switchboards for polyphase circuits with pressures of 1,100 to 2,200 volts. Circular No. 1,057 describes O. D. transformers for light and power work. These, the company states, are designed as the result of 15 years' experience in the manufacture of transformers of this type. They may be used upon circuits of any frequency from 4,800 to 16,000 alternations per minute.

"Brownhoist" locomotive coaling stations for supplying coal to locomotives without the use of chain conveyors are described in a handsome illustrated pamphlet, of 20 pages, published by the Brown Hoisting Machinery Company, of Cleveland, Ohio. The pocket in these stations is of steel of the suspended-bin type. Gravity dumping tubs of steel, each with a set of beam scales for weighing the coal accurately are used. The hoisting and conveying machinery is of the well-known "Brownhoist" pattern. The company claims that in these stations the breakage of coal is reduced to a minimum.

GENERAL MINING NEWS.

Petroleum Developments.—During November, 1,307 wells were completed in the Pennsylvania and Trenton oil fields, the dry holes numbering 276 and the new production amounted to 16,512 bbls., says the Oil City *Derrick*. More wells were completed than during any other month of the present year. Compared with October there is an increase of 81 wells completed and 38 dry holes, accompanied by a decrease of 78 bbls. in the new production. The figures on new production have proved very nearly constant, having ranged in the neighborhood of 16,000 bbls. for the past 7 months. The new work in progress at the close of November was composed of 579 rigs and 1,124 drilling wells. This was a decrease of 45 rigs and a gain of 29 drilling wells, making a net loss of 16 in new operations as compared with the figures for the last of October.

Tri-State Mining and Manufacturing Company.—This company states that it is incorporated under the laws of New Jersey for $125,000 and will operate in Virginia and Tennessee with the executive headquarters in Pittsburg, Pa. It controls 15,000 acres of barytes bearing land, and has purchased the property of the Clinch Valley Glass Company at Richlands, Va., with the building and improvements thereon, costing in the neighborhood of $35,000. A modern plant will be installed at Pittsburg for the manufacture of barytes. The company will install a complete outfit from the mining of barytes to the finished product, including an up-to-date laboratory. W. H. Kemler, who was for 8 years chief chemist for the Oliver Iron Works, of Pittsburg, will be general manager, and R. B. Miller, will be superintendent. M. L. Knight, of Beaver Falls, Pa., is president; John R. Snodgrass, vice-president; and Bailey E. Hobson, treasurer.

This company states that it has in addition to the large holdings of barytes some valuable deposits of carbonate of barium, and while operations for a capacity of 50 tons a day have just been started, orders have already been booked for 13,000 tons of crude barytes, which is remarkable for its purity. Duplicate orders have been placed for the machinery and an output of 100 tons a day will be figured on. The Pittsburg office of this company will be located at the corner of Grant Avenue and Bouquet Street, North Side, with Fred J. Shaler as secretary. Communications containing reference to machinery, etc., should be addressed to the Tri-State Company at Richlands, Va., to W. H. Kemler, general manager, or R. B. Miller, general superintendent.

ARIZONA.

COCHISE COUNTY.

Copper Glance Mining Company.—This company's property is situated 7 miles east of Bisbee. No. 1 shaft, 2-compartment, is down 110 ft. No. 2 shaft is down 40 ft. The company proposes to sink both shafts 600 ft. At present 16 men are employed, under C. C. Warner, of Bisbee, the superintendent. S. W. Clawson is president of the company; C. C. Warner, vice president; G. E. Tomlinson, secretary; James Wood treasurer, and C. L. Beckwith, manager. The capital stock is $2,500,000. The company's headquarters are at Bisbee.

GRAHAM COUNTY.

Horseshoe Mining Company.—This New Jersey corporation has the following board of directors: I. L. Qualey, president, Safford; Edward K. Hoyt, secretary, New York City; Frank S. Weller, treasurer, New York City; Henry E. Hutchinson, Brooklyn, N. Y.; Francis H. Wilson, Brooklyn, N. Y.; J. N. Porter, Safford; George V. Sheffield, Pompton, N. J.; J. H. Doherty, Brooklyn, N. Y. The company's property is located 9 miles from Safford, and includes the Great Eastern group of 9 claims. This group is said to show a wide and rich ledge of ore.

CALIFORNIA.

Empire Consolidated Quicksilver Mining Company.—This company capitalized for $5,000,000 par of shares $10, has properties situated in Lake and Colusa Counties. William Henry Dowe is president, H. H. Adams is vice-president and among the directors are the above, David A. Gregg, Nashua, N. H., and E. St. John and John A. Lowell, of Boston. Massachusetts National Bank is registrar and the American Loan and Trust Company, transfer agent. There are about 350 stockholders in the company.

The company has three properties, the Sulphur Banks Company, 3,260 acres, the Empire and Central Mines, 70 acres and the Abbott Mines, 554 acres, a total of 3,884 acres. These companies have a combined furnace capacity of 175 tons per day and a furnace is being equipped at the Empire and Central mines having a capacity of 40 tons daily. The Sulphur Banks property has been operated since 1874 and has it is said, produced $2,775,000 of quicksilver.

ALAMEDA COUNTY.

(*From Our Special Correspondent.*)

Pacific Ore Smelting Company.—This company is putting up buildings in Oakland, where ship and rail transportation meet. The plant has been at North Beach, San Francisco. The company is understood to be a subsidiary of the Puget Sound Reduction Company, with a smelter at Everett, Wash.

AMADOR COUNTY.

(*From Our Special Correspondent.*)

A rich prospect is being opened up on the Orr Ranch, north of Plymouth, and about 1½ miles north of Empire Mine. The croppings were found in the bed of Indian Creek.

Buena Vista Copper Mining and Reduction Company.—Lumber for the necessary buildings has been sent to this company, which is engaged in opening up its property. Grading is being done for the engine and hoist and the shaft will shortly be unwatered.

CALAVERAS COUNTY.

(*From Our Special Correspondent.*)

T. L. Dennis, of Jenny Lind, reports that the Cutler ranch has been bonded to parties who are to prospect with a view of putting in dredges. The channel of the Calaveras River, through the same place, has been leased to Hamman & Cornduf, who are to prospect it thoroughly. They are now operating gold dredges on the Feather River.

C. D. Lane, of the Utica Mine, with some Eastern men, has secured rights for 500 in. of water in the Stanislaus River. It will be taken from the middle fork, near headwaters, and brought about 35 miles to Murphys and Vallecito to furnish power and light to the mines at those places. It is the intention later to extend the ditch to Angels.

Calaveras Mining, Power and Water Company.—The big ditch on which 300 men are at work is nearly completed. It will take water from San Antonio Creek, near Big Trees, and carry it to O'Neil Creek, thence to a ditch, which will carry the water 18 miles to San Andreas, where it will be used by the hydraulic mines.

Gold Run.—W. B. Swank has made application to the California Debris Commission for a permit to hydraulic this mine, near Mountain Ranch. The tailings are to be deposited in a ravine below the mine after the necessary restraining dam is built.

KERN COUNTY.

(*From Our Special Correspondent.*)

Bismuth Ore.—In a silver-copper mine struck recently two miles north of Garlock considerable bismuth is found. Samples received in Los Angeles show quite a high percentage.

Greenback.—This mine, at Woody, is again shipping ore.

Green.—This group of 2 gold mines, near Mohave, is reported sold to New York purchasers, and work is to be done on a larger scale than heretofore. The claims adjoin the War Eagle Mine.

Mainworth Coal Company.—This company has let a contract to the Western Electric Company for an extensive plant. The coal at the mine will be used for developing electricity to be transmitted to Randsburg for use at mines and mills.

NEVADA COUNTY.

(*From Our Special Correspondent.*)

Grizzly Hill.—The new cement mill at this mine, above Edwards Crossing on the North Bloomfield road, has started. New buildings, boarding houses, etc., are being erected. G. P. Hall is superintendent, and J. F. Dudley, foreman. Twenty men are employed.

Ironclad.—This old mine, in Rough-and-Ready District, is to be reopened and developed by a new company. The mine has been idle many years.

Midnight.—A 5-stamp mill, with provision for 5 more stamps, is to be put on this mine, on Deer Creek near Grass Valley. The owner, Edwin Tilley, has completed a satisfactory test at a custom mill.

Murchie.—There is a movement to begin work on this old mine, near Grass Valley. The mine has been idle for many years, but it is thought that cheap power and modern methods will make it profitable.

PLACER COUNTY.

(*From Our Special Correspondent.*)

Dardanelles & Oro.—William McDonald has applied to the California Debris Commission for a permit to work this mine near Forest Hill by hydraulic process. The tailings are to be deposited on Dardanelles Canyon behind a dam to be constructed.

Occidental.—John Ellsworth has been appointed superintendent of this gravel mine at Iowa Hill.

Rawhide.—The machinery for a new mill has been shipped to this mine, near Towle Station.

PLUMAS COUNTY.

(*From Our Special Correspondent.*)

Adelaide Mining and Milling Company.—This company has been organized at Reno, Nev., to work this mine, adjoining the Last Chance. The men will be kept at work all winter. The incorporators are General Turritin, president; R. C. Taylor, general manager; John Sunderlund, Jr., secretary; D. D. Griffith, of Oakland, and C. R. Johnson, of Salt Lake.

Smith Bar.—This mine, near Keep, is to be worked by hydraulic process if the California Debris Commission grants a permit to W. S. & C. A. Cooley. The tailings are to be deposited in a worked-out pit.

SACRAMENTO COUNTY.

(*From Our Special Correspondent.*)

Gray Wing.—Exceptionally rich gravel has been found in this mine, about 4 miles from Folsom. The claim is on ranch land, and the private company operating it has leased the mining privileges on about 120 acres. A 60-ft. shaft was sunk and drifts run through bed rock, and then upraises were made. Much of the gravel ran from $12 to $15 to the pan, and many pans of $90 gravel were washed. This is an old mining region, where more or less work has been going on since 1849. The Blue Ravine, a very profitable mine, is nearby. The discovery of this new rich channel in the Gray Wing ground has attracted much attention to the locality, and a great deal of prospecting is going on. The bed of gravel as far as developed shows a thickness of about 6 ft.

SAN DIEGO COUNTY.

(*From Our Special Correspondent.*)

Oro.—At a depth of 300 ft. this mine at Escondido is reported to have a 4-ft. vein of satisfactory ore.

SANTA CLARA COUNTY.

(*From Our Special Correspondent.*)

Silver Creek.—The result of the first run of this quicksilver mine, near Evergreen, was so satisfactory that it has been decided to double the furnace capacity. The owners are H. R. Bradford, of San Jose, and John and James Treadwell, of San Francisco.

SHASTA COUNTY.

(*From Our Special Correspondent.*)

Daniel McCarthy, who has a bond on 16 copper claims in the Joe Creek region, near the Oregon boundary line, states that he has rebonded the property for $170,000 to a Hartford, Conn., company.

Platinum Discovery.—The reports of extensive platinum finds in the Harrison Gulch district prove to have been greatly exaggerated.

Kosk Creek Copper District.—Machinery, consisting of boiler and engine, pump, hoist, etc., has been shipped to copper claims in this district, north of Big Bend. W. G. Scott represents the company having a bond on the group of claims for which the machinery is intended and which belongs to William Murrall, R. M. Sallzer, Braynard & Perry, and others, of Redding.

Midas.—This mine, at Knob, Harrison Gulch District, is running 20 stamps on good ore. That section of Shasta County is quite active at present.

Mt. Shasta.—It is again rumored that the necessary financial arrangements have been made which will permit resumption of work on this quartz property.

Mountain Copper Company.—A suit is on against this company at Keswick for alleged injury done by the smelter fumes.

Sybil.—This mine, near French Gulch, is again in the courts. A suit has been filed in the Circuit Court at San Francisco by Charles G. Rose, trustee, of New York, against the Sybil Mining Company, incorporated under West Virginia laws. The allegations are that default was made in the payment of bonds and coupons aggregating $29,000. It seems that some years since G. A. Van Kruze made an agreement with a number of New York men to work the mine on a partnership basis, and Charles G. Rose was made trustee for the Eastern men. The latter did not perform their share, and finally Van Kruze obtained judgment against them for $1,900. The mine was attached, and he bought it in at sheriff's sale. Mr. Rose, in the meantime, organized a company and issued bonds, interest to be paid from the proceeds of the mine. The suit is now brought for the amount of bonds and interest secured by a mortgage on the mine due in 1904. Van Kruze, who has recently been shipping ore from the mine, will contest the proceedings on the grounds that the mine is owned solely by him, that the New York men long since forfeited their interests, and that their corporation is an illegal one.

SISKIYOU COUNTY.

(*From Our Special Correspondent.*)

Joe Creek Copper.—Some copper deposits were discovered about 3 years ago at the head of Joe Creek, a tributary of Elliott Creek, on the Siskiyou Mountains, near the border of Oregon. Some work has been done, but there are no smelters or railroads. As the mines are on the west side of the Siskiyou Mountains, the natural outlet would be through Jackson and Josephine counties, Oregon. Captain J. R. De La Mar, owner of the Bully Hill smelters and mines in Shasta County, has bonded the McVey group of claims on Joe Creek for a sum, said to be $200,000. The claims are at an altitude of from 4,500 to 5,100 ft.

Myers Ranch.—A prospecting mill is being erected on this property near Yreka, on an old quartz ledge, recent prospecting on which showed sufficient good ore enough to warrant the mill.

Oregon & California Mining Company.—The company's new 10-stamp mill, on the Klamath River, above Ash Creek, is about ready to start work.

TRINITY COUNTY.

(*From Our Special Correspondent.*)

Buckeye Water and Mining Company.—The property of this company in Buckeye Mining District, consisting of water rights, reservoir sites and placer claims, has been sold at sheriff's sale to satisfy a judgment of $17,205, held by Jennie M. Stephens.

Sweepstakes.—About 8 miles of the 30-in. pipe for the water supply of this hydraulic mine have been laid to the headwaters of East Weaver Creek. The syphon to connect the 2 lines of pipe will cross Oregon Mountain. The large reservoir is nearly finished. The Canyon Creek pipe line will not be completed this season.

TUOLUMNE COUNTY.

(*From Our Special Correspondent.*)

Donella, Champion & Pleasant Hill.—These mines, near Arrastraville, have been bonded by Murray Innes, of San Francisco, from B. Soulsby, of Soulsbyville.

Halk Ranch.—A 6-h. p. gasoline hoist has been put on the mine on the J. L. Halk ranch near Sonora.

Horseshoe Bend.—Plans and specifications are being prepared for a new gallows frame and hoist for this property.

Little Bonanza.—This tunnel, at Sonora, has 180 ft. to run to tap the bottom of the incline on Cowan's Hill, and the mine is to start up.

Porto Fino.—Good ore has been struck in this mine near Carters. The mine has been equipped with a steam hoist and air compressor.

Seminole.—This mine is being unwatered preliminary to an investigation by parties who have bonded it.

Stockton Gravel Mining Company.—The gravel properties of this company will start on as soon as there is sufficient water.

Victoria.—The Victoria, Nos. 1 and 2, with water rights and a 2-stamp mill, have been bonded to Geo. Lightfoot by A. H. Heath and Victoria Haynes.

Wild Cat.—The old shaft is being cleaned out preparatory to development.

COLORADO.

CLEAR CREEK COUNTY.

(*From Our Special Correspondent.*)

American Sisters.—Judge F. L. Burton has secured control of this property at Lawson, and will put on a complete hoisting and air compressor plant, drive a tunnel and open the vein at greater depth.

Atlantic-Pacific Tunnel.—Some reports in the newspapers say that this tunnel is to resume as the Denver-Salt Lake Mining, Railway and Tunnel Company, with James E. Ratchford, of Syracuse, N. Y., at the head. While the tunnel has been driven for a mile, and there are a number of silver and lead discoveries in that section, it is hardly possible that work will be started in the dead of winter. The work under the new ownership so far has been on paper.

Colorado Specie Payment.—The new owners have opened free gold on the Specie Payment Mine, near Idaho Springs. The streak is 2 ft. wide and runs $100 per ton. A mill streak 10 ft. wide is netting $7 per ton under stamps at Black Hawk.

Gum Tree Gold Mining and Milling Company.—New York and Massachusetts people are interested. An air compressor was added during the summer, and sinking resumed. In cutting new stations last week at a depth of 400 ft., another ore shoot was struck east of the shaft, and this week a wide body of smelting and milling ore west of it. About 4 ft. of the latter streak will run $35 a ton in lead, copper, gold and silver.

Little Mattie Mining and Milling Company.—This consolidation of a number of mines at Idaho Springs is finally accomplished. The property includes the Mattie, Republic, Decatur, Apex, Silver Glance and others, making an outlay of about $250,000 for the group. The concentrating mill has a capacity of 100 tons of ore per day. The Mattie shaft is down 800 ft., and above the 6th level the production from the Mattie has been about $1,000,000. The claims cover the apex of the great Mattie vein. John H. Shaller is at the head of the new company.

Russell & Marshall Gold Mining, Milling and Tunnel Company.—This company is putting in a big plant of machinery at Empire Station, and will drive a tunnel into Covode Mountain. It owns a group of 60 patented claims, several of which show wide bodies of sulphide ore on the surface. A concentrating mill is to be erected.

Seaton Mining and Milling Company.—J. J. May has resigned as manager at Idaho Springs to give attention to the Alma, in which he is heavily interested. F. S. Goldsmith, formerly manager, has been reemployed. Pending the change the mine closed down.

Stanley Mining and Milling Company.—Over a year ago a receiver was appointed for this mine at Idaho Springs, because of trouble among the stockholders and directors. The trouble is settled, and the receiver is to be discharged. The mine is working and paying.

Wisconsin vs. Dives-Pelican.—The litigation has been settled out of court. The Dives, at Silver Plume, was found to be in Wisconsin territory, and a drift proved the fact. The compromise provides for right of way through all of the Pelican ground to work the Wisconsin lode; in return, the Wisconsin people release the Dives-Pelican from any claims for ore extracted from the Wisconsin ground in the past.

GILPIN COUNTY.

(*From Our Special Correspondent.*)

Mining Transfers and Deeds.—C. J. Berquist to C. Swanson 1-4 interest Royal Flush lode, Pine District; L. H. Stockbridge to C. G. Totman, the Morning Star and Parole lodes, Gregory District; B. H. Koch to J. C. Benson 1-4 interest in J. B. lode, Hawkeye District; J. Dewhurst to M. Dewhurst, et al, 1-3 interest Free Coinage and Zingville lodes, Pine District; C. J. Bell to Defiance Mining Company, the Defiance and Bench lodes, Russell Districts; R. C. Barker to B. F. Bellows, et. al., 2-3 interest in Del Norte lode, 1-3 interest Waterloo lode and 1-4 interest in Rough and Ready lode in Fairfield and Enterprise Districts; E. O'Neill to M. Jewhurst, et. al., the Independence lode, Central District.

Gilpin Ore Shipments.—The shipments of smelting and crude ores, concentrates and tailings, from the Black Hawk depot of the Colorado & Southern Railroad to the smelters and outside points for November, were 323 cars or 5,975 tons, a satisfactory increase over the corresponding month of last year.

Beacon of the West.—Lehmer & Berger are working this property under lease and bond and are taking out smelting ore worth over $100 per ton, and are shipping a 50-ton lot of concentrating ores this week to Idaho Springs.

Gower Mines Syndicate, Limited.—Preparations are being made to sink the shaft 125 ft. deeper or to 750 ft. Some splendid smelting and concentrating ores are taken out and the property is paying handsomely to its British owners. About 45 men are employed, their wages being increased from $2.50 to $2.75 per day.

Mammoth Mining Company.—Operations are resumed by the Chicago and Colorado operators. Connections with the main shaft will be made through Waterbury adit, after which the shaft, now 700 ft. deep, will be sunk deeper. W. H. Paul, Central City, is in charge.

Stewart Gold Mining Company.—Returns from a 6 1-2 cord lot of mill ore, gave gold retorts of 30 oz. and 4 dwts. and 9 tons of tailings worth $20.20 per ton, bringing the values up to nearly 7 oz. gold per cord. The ore is coming from the 140 ft. level of the Stewart in Hawkeye district. New England parties are interested, with J. A. Gilmour, Central City, as manager.

GUNNISON COUNTY.

Belzora-Bassick Mining Company.—This company representing Michigan capital, is prosecuting work on its group of 13 claims in the gold belt west of Pitkin. The principal development thus far has been on the Monte Vista lode, which has produced considerable ore, and on the New Bassick lode.

David H.—The Leadville company which recently purchased this mine from Hugh Crymbal for $40,000, is prosecuting work and stoping ore faster than teams can haul it to the smelter.

LAKE COUNTY—LEADVILLE.

(*From Our Special Correspondent.*)

Arkansas Valley Smelter.—This is the only plant of the American Smelting and Refining Company, at Leadville, that is operated. A set of new roasters will enable it to handle over 3,000 tons more of sulphides a month.

Bartlett.—At a depth of 200 ft. a 4-ft. vein of ore is being developed. This stuff averages 40 to 50 oz. silver.

Diamond Gold Mining Company.—At 900 ft. in the new shaft drifts are being run to tap the Resurrection ore shoot. Streaks of ore are being met. The shaft is 930 ft. deep and is equipped with a fine plant of machinery. Philadelphia people are back of the enterprise.

Fanchon Gold Mining Company.—This company has 73 acres in a new consolidation of Sugar Loaf properties. A new shaft is sunk, while some ore is being taken out of old workings, averaging 80 oz. silver.

Garbutt.—This Breece Hill property, which has been shipping 5 to 8 per cent copper-gold ore, has closed down temporarily on account of inability to market its product.

Hap Hazard Gold Mining Company.—This new incorporation is to work the Hap Hazard group in Lake Park. The capitalization is for $1,000,000, and the incorporators are W. M. Harvey, J. M. Maxwell, W. A. Moore, Thos. Ovens and Albert Trego.

Mosquito Range Tunnel.—Rumors are afloat that a tunnel will be run through the Mosquito Range to connect Lake and Park County mineral belts. The Resurrection Company is acquiring a large acreage east of its present location toward the range, and other signs indicate there may be some foundation for the report. Such a tunnel has been under consideration several times in the past. It would open an immense area.

Penn Mining Company.—Work is being pushed through 2 shafts, and the low grade bodies are improving. Fifty tons a day are shipped of fair grade siliceous ore.

President.—A large siliceous ore body is being developed, which will run gross about $12 to $16 a ton. Shipments are to be regular.

Resurrection Gold Mining Company.—In order to get more stoping ground No. 1 shaft is to be sunk deeper in its sulphide zone. The base of operations of the company is No. 2 shaft, where at 1,000 ft. connections have been made with No. 1 workings. The mine is being equipped with the largest plant of machinery in the camp.

Rex Mining Company.—This company is headed by Mayor McDonald, and owns territory in Iowa and Big Evans Gulches, also at Robinson. It has no connection with the Rex gold proposition in Iowa Gulch.

Rialto Leasing and Mining Company.—The company has issued bonds for $150,000, settled up its old debts and is preparing to resume work at its Pyrenees shaft at a depth of 1,100 ft. A new pump is being put in.

Sedalia.—Considerable oxidized ore was shipped between the 640 and 700 ft. levels, but the shaft is being sunk to tap the sulphide zone. The shaft is down 1,035 ft. and another week should put it into ore. The shaft is only 280 ft. from the Resurrection. The company has over 10 acres in its combination.

Yak Mining and Milling and Tunnel Company.—The tunnel is going ahead slowly. A steady production of zinc ore is shipped to the smelter at Cherokee, Kan., where it is treated by the Sadtler process.

MINERAL COUNTY.

Humphreys Tunnel and Mining Company.—The company is erecting a 150-ton concentrating mill at Creede from designs of the Hendrie & Bolthoff Manufacturing Company, of Denver, that is installing the machinery. The mill building is 400 ft. long and nearly 200 ft. high, extending up the hillside. The ore will be hauled by electric power through the Wooster tunnel to the ore bins.

OURAY COUNTY.

Camp Bird Mines.—Manager John W. Benson, of Ouray, has been adding expensive machinery to the equipment. The usual output of gold from the plates continues; in addition to this shipment nearly 2 cars of rich concentrates are shipped out daily.

Caroline.—This company will soon have a large force at work on its new power house. This will make the 4th power house used by the company to work the enormous plant 10 miles south of Ouray. The electric power house is inside the city limits and will be completed by January 1. The sinking of the main shaft, already down 1,000 ft., necessitated another power house.

Colorado Gold and Copper Company.—This company has started work on a tunnel near Ouray and active operations will continue all winter. A power station and terminal tramway will soon be completed and the tunnel worked by air drills, with electricity as the motive power. The group of claims owned lies at the base of Gold Hill. Ex-Lieut. Gov. Carney, F. J. Hulaniski, E. H. Powell and other Ouray mining men are the officers of the company.

SAN JUAN COUNTY.

Kendrick & Gelder Smelter Company.—A circular issued by the Kendrick Promotion Company, of Denver, states that since the last quarterly report of the smelting company was issued, considerable more ore has been developed in the mines at Silverton. No. 7 level, now in 600 ft., is to be driven all winter. It will develop ore 400 ft. below level No. 3. The Henrietta Lizzie vein, which No. 7 tunnel will cut, is said to carry gold and silver with some lead and copper, and to be good concentrating material. The company has contracted with the Oliver Reduction Company for a concentrating mill of 200 tons daily capacity at first to be erected on Cement Creek, near the railroad. The mill will be connected with the railroad by a tramway. The concentrates from the mill will go to the smelter which is now being enlarged.

TELLER COUNTY—CRIPPLE CREEK.

(*From Our Special Correspondent.*)

Bedford Gold Mining Company.—It is reported that a couple of good strikes have been made in a tunnel run 650 ft. on Cow Mountain, and that the showing is very encouraging. The discovery has aroused much interest, and development work is being pushed.

Last Dollar Company.—The directors of this company have declared a quarterly dividend of $30,000, after an interval of 10 months since the payment of the last. The company has been buying machinery and doing heavy development. It has placed an order for a new pump, to be operated by electric power with a capacity of about 300 gal. per minute. The mine is in excellent condition.

Buckhorn Gold Mining Company.—At the annual meeting the following directors were elected: F. E. Robinson, N. S. Gandy, H. M. McAllister, W. A. Otis and W. P. Sargeant. F. E. Robinson was chosen president. No special development work has been done in the past year, but the Whippoorwill claim of this company was sold to W. S. Stratton for a good sum and the treasurer reported about $9,600 in the treasury.

Doctor-Jack Pot.—It is understood that the mine is shipping about 25 tons a day from the old workings. From the main shaft a drift is being run 9 ft. a day on the vein. The pumps are raising 1,800 to 2,000 gal. of water a minute.

Findley Gold Mining Company.—The trouble between the lessees and the company has been settled out of court. The disagreement was on account of some difficulty about the extension of the lease. In the settlement the company agreed not to interfere with the lessees. The property is on Bull Hill and adjoins the famous Hull City placer of the Independence Company. Considerable ore has been shipped at times and it is understood that there is considerable in sight now.

Leasing System.—There is considerable talk in the district about a return to the leasing system. There is no doubt that there is not nearly so much leasing now as some time ago. There have been a number of consolidations among the larger companies and a number of the leases that were running when the mines were first opened up have expired.

GEORGIA.

LUMPKIN COUNTY.

(*From Our Special Correspondent.*)

Lumpkin County Mining Company.—This company has been organized to operate the Briar Patch property. Judge S. P. Shope, of Chicago, is president. The company proposes to place water on the property, and build one, and possibly two stamp mills. Headquarters are at Auraria.

IDAHO.

BLAINE COUNTY.

Croesus.—A new mill is to be built at this mine near Hailey by H. L. Hollister and associates. Grading has started.

Rosetta Mining Company.—H. P. Taylor of Hailey is consulting engineer for this company which is developing gold quartz claims on the South Boise. Two drifts are to be driven on the vein this winter.

SHOSHONE COUNTY.

Etruscan Gold Mining and Milling Company.—Joseph Johnson is general manager for this company. The company has 4 gold claims. George E. De Snell, of Butte, is president; C. M. Parr, of Butte, secretary and treasurer. It is the intention of the company to erect a 40-stamp mill next spring. Mr. Johnson has, it is said, sunk 350 ft. of shaft and driven 1,400 ft. of tunnel. Three veins have been cut, and a car of ore shipped to Butte. One vein, on the Argus claim, is 100 ft. wide, but low grade, averaging only about $4 per ton. It was first exposed on the surface by the New York Placer Company, which formerly owned the property.

Northern Gold Mining Company.—This company has Wallace as its principal place of business, and its capital stock of $550,000 is divided into 550,000 shares. The incorporators and directors are C. S. Crysler, J. M. Savage, B. M. Crysler, H. E. Charney and C. W. Christman. The special purpose of the incorporators is to work the deep placers on lower Beaver Creek, between the mouth of the stream and Delta, most of which are now under bond. Work is to begin on an elevator immediately.

MICHIGAN.

COPPER—HOUGHTON COUNTY.

Copper Range Consolidated Company.—This company has been incorporated at Trenton, N. J. The capital is $28,500,000, and the company under its charter is empowered to mine, smelt, and deal in copper and other ores. The names of the incorporators are: John Gordon, H. L. Foster, D. A. Childs, P. T. Draper, W. L. Sahey, of Boston, and A. S. Meeker, L. B. Dailey, H. K. McLaren, C. W. Perkins, of Jersey City. The company takes over the Copper Range Company and the Baltic Mining Company. Stocks of the Copper Range and Baltic held by the St. Mary's Mineral Land Company, go into the deal.

Of the 285,000 shares of the new Copper Range Consolidated Company, 100,000 will be used to take up Baltic stock, 150,000 for Copper Range and 35,000 offered for subscription at $40 per share. This will provide a treasury fund of $1,420,000. The Trimountain does not go into the deal.

The capitalization of the new company leaves ample provision for the taking over of the Trimountain Company at a later date if it is desired by those in control, and also for the acquisition of the holdings in the Champion Mine of the St. Mary's Mineral Land Company. The new company starts out as a producing proposition, for the Baltic Mine has been turning out copper for some time past and the Champion will, within a short time, also start to stamp its rock, using at first 2 heads of the Atlantic Mill.

Wolverine.—The output for November is given as 254½ tons and for the 11 months 2,784¼ tons. These figures compare with 249½ and 2,504¼ tons in 1900.

(*From Our Special Correspondent.*)

Calumet & Hecla.—Construction work on the new electric power plant at the stamp mills at Lake Linden is under way. The building will be divided into 2 parts, each 95 by 50 ft., and 48 ft. high.

Globe.—This property, owned by John Stanton, of New York City, is being explored with a diamond drill for the Baltic amygdaloid lode.

Mayflower.—The permanent shaft on the recently discovered lode is down some distance, and drifting will start within 2 weeks. The shaft is well timbered, and the surface equipment consists of 3 boilers, a hoist and a 10-drill air compressor. The lode outcrops in the northeastern portion of the property and probably underlies part of the Old Colony lands.

Old Colony.—The vertical exploratory shaft on the new amygdaloid lode is now about 80 ft. deep. The lode lies about 1,500 ft. east of the Kearsarge lode, and where cut by the diamond drill at a depth of 550 ft. carries considerable shot and heavy copper. The shaft will be sunk to some depth and then drifting north and south will begin.

St. Mary's Canal Mineral Land.—This company is exploring section 21 with a diamond drill for the Baltic lode.

IRON—MARQUETTE RANGE.

Cleveland-Cliffs Iron Company.—The new charcoal furnace at Marquette will be of 150 tons capacity daily. The furnace and the carbonizing plant for saving the by-products will cover about 8 acres of ground. The W. B. Pollock Boiler and Furnace Works, of Youngstown, O., has built the stack and stove shells, and the steel buildings are being erected by the American Bridge Company. The blowing engines will be from the Southwark Foundry, and there will be 3,000 h. p. Stirling boilers fitted with Sturtevant induced draft. The stock house will be 65 by 450 ft. The furnace is expected to blow in during 1902.

Section 21.—This mine of the Lake Superior Iron Company at Ishpeming, promises to develop into one of the largest in the district. In the east shaft there will be 2-ton skips and a cage. A new Prescott pump now takes the place of the old one. The company is exploring for ore on Section 20.

MISSOURI.

JASPER COUNTY.

(*From Our Special Correspondent.*)

Joplin Ore Market.—The top prices for zinc and lead ore have remained unchanged, although the lower grades of zinc ore advanced in many instances. Some exceptionally choice zinc ore remained unsold. The tonnage was exceedingly large. Over 1,500,000 lbs. more of zinc ore and 100,000 lbs. of lead ore were sold than during the corresponding week of last year. The close of November shows that the value of zinc and lead ores produced in the Missouri-Kansas district during 1901 will exceed $8,000,000.

A feature of the week was the loading of 10 car loads of zinc ore by the Missouri & Kansas Zinc Miners' Association for exportation. Twenty additional cars will be loaded as quickly as they can be secured. The report from New York that an American smelter combine will be perfected before January 1, 1902, is credited by the leading mining men of the district.

The lead ore production continues large and the price steady. The 4 concerns now in the field have worked peacefully and the entire production is cleaned up each week. The highest price paid for zinc ore during the week was $30 per ton upon a straight bid. Lead ore brought $23.25 per 1,000 lbs. delivered. A large part of the production was purchased by local concerns.

During the corresponding week of last year zinc ore's top price was $28.50 per ton, and lead ore brought $23 per 1,000 lbs. Up to the present, the year's production is slightly less in tonnage and price than the corresponding period of last year, but December is expected to make up the deficiency. Following is the turn-in by camps of the Joplin district for the week ending November 30:

	Zinc. lbs.	Lead. lbs.	Value
Joplin	3,228,460	554,690	$58,092
Galena-Empire	1,309,130	207,080	23,211
Carterville	1,215,530	370,210	24,409
Aurora	998,700	41,790	11,461
Orongo	523,920	22,610	7,438
Zincite	426,660	17,890	6,223
Duenweg	304,550	71,850	5,782
Carl Junction	400,290	16,450	6,186
Spurgeon	206,060	81,940	4,687
Webb City	334,300	15,800	4,713
Granby	324,000	43,000	3,774
Carthage	310,200	.....	4,343
Roaring Springs	171,610	4,410	2,162
Cave Springs	103,570	32,020	2,202
Central City	134,100	670	1,759
Neck City	228,130	.....	3,194
Ash Grove	.....	50,000	1,100
Stotts City	137,230	.....	1,921
Total	10,356,440	1,530,410	$174,660
Total 49 weeks	480,762,240	65,897,920	$7,360,533

Zinc value for week, $137,930; lead, $36,730; zinc value 49 weeks, $5,846,782; lead, $1,513,751.

MONTANA.

BEAVERHEAD COUNTY.

(*From Our Special Correspondent.*)

Indian Queen.—This property, under the management of Capt. S. J. Dennis, of New York City, is sinking a winze from the tunnel level. A compressor at the tunnel portal near the creek furnishes power for the hoist and for the drills and pump.

CASCADE COUNTY.

(*From Our Special Correspondent.*)

Anaconda Copper Mining Company.—Josephine Voight has conveyed by deed 650 acres of fire clay land, together with a plant situated near Belt, to this company. The consideration is $20,500. Four cars a week of this clay has been going to Anaconda for use in lining convertors.

Boston & Montana Smelter.—It is thought that this plant, near Great Falls, now being reconstructed, will be ready to blow in again by January 1.

FERGUS COUNTY.

Abbey.—J. R. Cook has made arrangements to float a company to develop this group of claims in the North Moccasin Mountains. The capital stock is to be $1,250,000. Elling Johnson, of Portland, Ore., is also interested in the flotation.

American Gem Company.—It is stated that this company will continue work at its sapphire mines, in Yogo Gulch, all winter.

Kendall Mining Company.—The Kendall Townsite Company has made arrangements with this company for a supply of water and electricity from the new plant, about a mile above the town of Kendall.

New Year.—The aerial tramway at these mines is about completed, but owing to improvements under way in the mines, it will not be used before January 1.

FLATHEAD COUNTY.

(*From Our Special Correspondent.*)

Vermillion River Placer.—This property, a few miles from Thompson Falls, and extending several miles along the Vermillion River was recently purchased by John Gerrick, of Butte, for $50,000. Mr. Gerrick is putting in a double compartment, flumes, each compartment 4 ft. wide with 3 1-2 ft. sides. A pipe line 2,300 ft. long, taking the water from a side gulch for a hydraulic head is about completed. The pipe, which is 20 in. in diameter at the upper end was shipped in sheets and put together on the ground with pneumatic riveters. The bedrock is a very tough clay. The gold is reported coarse, easy to save and worth $18.60 per oz. The gravel bank is from 5 ft. to 15 ft. deep, and prospects from grass roots to bedrock. At an ordinary stage of water the flume will handle 1,500 cu. yd. of gravel each 24 hours. The grade of the flume is 4 in. to each 12-ft. box.

GALLATIN COUNTY.

(*From Our Special Correspondent.*)

Montana Corundum Company.—This company is incorporated for $300,000, with 300,000 shares at $1 each, and intends to operate the corundum mines west of Salesville. The incorporators are C. E. McCoy, Harris Kirk, Frederick L. Line, P. S. Johnson and L. S. Ropes. The principal place of business is Bozeman. The corundum is said to be very fine.

GRANITE COUNTY.

Highland Mining and Milling Company.—This company recently organized by J. J. O'Meara, W. E. Deeney, Gustave Nissen, J. P. Brown and J. F. Duffy, of Butte, has bought the 10-stamp mill of the Red Lion Company and is transferring it to its own ground. The deal was perfected through Curtis & Majors, who have long had an interest in the Red Lion property. As soon as the mill is in running order the stamps will drop on ore from the Highland Company's 11 claims, which are located in the Red Lion District on Flint Creek, 11 miles from Philipsburg, and 24 miles from Anaconda. This company is organized on a basis of 1,000,000 shares of stock, at a par value of 50c. each. The officers are: President, J. J. O'Meara; vice president, W. E. Deeney; treasurer, J. P. Brown; secretary, Gustave Nissen; general manager and superintendent, J. F. Duffy. They also constitute the board of directors. In addition to 11 quartz claims, the company owns a mill site, timber and water right. The ore is principally gold-bearing, but carries some silver. It is free-milling and concentrates 8 to 1. There are 2 or 3 veins, one of which, as shown in 2 shafts, is 3 ft. wide. On one claim is a 60-ft. shaft. Five men are now at work on 3 of the claims. A tunnel is in about 200 ft.

JEFFERSON COUNTY.

(*From Our Special Correspondent.*)

Era May.—This property, 7 miles from Basin, has purchased from Mitchell & Turner a single drum, 2-cylinder, 14 by 16 in., geared hoist, fitted with band friction clutch, built by Hendrie & Bolthoff, of Denver, Colo. The engine is of the latest type, has a hoisting speed of 700 ft. per minute, with a load of 7,000 lbs., and is good for 1,500 ft. depth.

Mascotte.—This property on Sheep Mountain, 5 miles from Homestake will be operated during the winter by Joseph Adams. A tunnel started on the Beef Straight side of the mountain will be driven under the ore shoot, which samples at surface 2½ oz. gold. The tunnel will have to go close to 1,200 ft. A compressor plant will be purchased.

Minah.—W. W. Pearson, who is operating this Wicke's property under a lease is shipping 4 cars a week. In cleaning out a cave in tunnel No. 3, the miners cut 3 ft. of oxidized ore, which ships at a good profit. Mr. Pearson has a lease running for 2 years at a royalty of 15 per cent, and must work not less than 15 miners. This lease covers from tunnel No. 3 to surface. The ore carries a heavy iron base and is shipped to the Colorado Smelter at Butte.

MADISON COUNTY.

Centennial-Toledo Mining Company.—This company has temporarily suspended operations at Sheridan.

Kennett.—This mine, near Virginia City, has closed temporarily. It is reported that the mine will resume soon. W. B. Millard, the manager, has gone to Omaha to order new machinery for the mill.

Lester.—The English company, which has been working this mine in Hurlburt Canyon, near Sheridan, has temporarily suspended work.

(*From Our Special Correspondent.*)

Fourth of July Group.—This group, near the new town of Jeanette, has been acquired by the Omaha & Montana Mining Company, recently organized. The consideration named is $50,000. It is the intention to carry on development work during the winter and build a mill in the spring. The lead is a continuation of the Clipper and Boss Tweed lead, and is from 40 ft. to 100 ft. wide.

MISSOULA COUNTY.

St. Regis Copper Mining Company.—This company has run 3 tunnels and a 275-ft. drift, making about 1,200 ft. of development. The outcrop on the surface is about 5 ft. wide and traceable for several hundred feet. Propositions have been submitted to get the ore to market, among them one to convey the ore to St. Regis by boat, a distance of 7 miles, in 10-ton lots. Wm. Houston is president of the company.

POWELL COUNTY.

(*From Our Special Correspondent.*)

Dry Cottonwood Sapphires.—Geo. W. Winter, of Butte, has made an examination of the ground on the Dry Cottonwood, 12 miles from Deer Lodge, for eastern men. For 20 years this gulch has been noted for the quality of the sapphires found in the gravel, including a number of gems of rare beauty. The colors range from white to different shades of green, straw, pink, purple and a spinel red.

SILVER BOW COUNTY.

Pennsylvania.—The Supreme Court has just handed down an important decision in the litigation between the Boston & Montana Mining Company and the Montana Ore Purchasing Company. Some time ago Judge Clancy of Butte denied a motion of the Boston & Montana for an injunction to restrain the Montana Ore Purchasing Company from working the Pennsylvania Mine pending a decision on the ownership of the mine by the Supreme Court. The Boston & Montana Company appealed from Judge Clancy to the Supreme Court, and the latter has now affirmed the decision of the lower court. There is now a provisional injunction in force under the terms of which the Montana Ore Purchasing Company is operating the Pennsylvania Mine, but it is not believed there will be further attempts by the Boston & Montana Company to enjoin the rival company until the Supreme Court shall hand down its opinion in the main case.

(*From Our Special Correspondent.*)

Omaha & Montana Mining Company.—John A. Creighton, John M. Dougherty, of Omaha, Neb., and Lulu F. Largey, Bernard Noon and W. W. Wishon, of Butte, are trustees. The capital stock is $150,000, in 15,000 shares of $10 each.

Hesperus.—Lee Mantle has sold to John MacGinnis mineral rights under a portion of the surface for $15,000.

OREGON.

BAKER COUNTY.

Bonanza.—The erection of the new hoist and sinking of the new 3-compartment shaft at this mine, near Baker City, are under way. The hoist will cost about $200,000 when completed. Each of the 2 200-h.-p. boilers weighs 25,000 lbs. The hoist will have a sinking capacity of 2,500 ft. The present depth of the mine is 400 ft. The mine now employs 150 men, and the monthly output is said to be over $50,000.

Cornucopia.—This company's mines, at Cornucopia, have shut down for the winter, a few men being retained to block out ore and keep the mine dry.

Flagstaff.—This mine, near Baker City, started up recently after a shut down of 16 months, under the direction of Manager Davis and Foreman McLain, who represent the new owners, a New York company, headed by P. H. Campbell. Twenty miners are at work. A compressor and air drills are to be installed.

Timber Canyon.—These gold mines, near Virtue, were recently sold by J. Thompson to T. C. Burke. The ledge is claimed to have an average width of 5 to 12 ft. through the length of the 9 claims in the group. The property has been worked by an arrastra. A contract has been let for resuming work on the upper tunnel, which will cut the ledge at about 200 ft. depth with about 40 ft. of additional work. A 10-stamp mill is planned.

JACKSON COUNTY.

(*From Our Special Correspondent.*)

Bill Nye.—This company, capitalized for $100,000, is doing steady development near Gold Hill. Ten tons of high grade ore milled at the Rogue River custom mill as a test cleaned up $2,000. There was also a 1 per cent concentrate of high value. The assay of average tailings shows a loss of 2 per cent in milling.

Bowden.—This vein near Gold Hill was formerly worked by a tunnel. The present owners are operating by means of a hoist through a shaft on the ledge, and are trying a steam drill at present, sinking on 3 ft. of ore at a depth of 75 ft.

JOSEPHINE COUNTY.

Old Channel.—These high gravel beds along Galice Creek are said to show a deposit over 5 miles long and 1-2 to 1 mile wide. Two ditches, one 12 miles long and the other 8, supply the 4 giants. A continuation of the shorter ditch will soon add 150 ft. pressure. Manager Harvey, of Grant's Pass, has a large force at work.

Stalker.—These placer mines near Browntown, 35 miles south of Grant's Pass, comprising 6 claims with water rights were recently sold to Albert Clemens, of Philadelphia, Pa., for $4,000. The water used is from Althouse Creek. The banks are from 6 to 15 ft. high.

PENNSYLVANIA.

ANTHRACITE COAL.

The tunnel at Quakake, being driven from the No. 4 slope of the Coxe Brothers at Beaver Meadow, to the Quakake Valley, is expected to be finished by December 10, after 2 years' work. The length of the tunnel will be 5,283 ft.

Buck Run Coal Company.—This company's new colliery west of Minersville, is nearly ready. A fine breaker is being erected which will have a capacity of over 1,000 tons. The firm is composed of B. E. Kingsley and G. A. Wescott, of Scranton. Mr. Kingsley is superintendent of the East Ridge Coal Company's operation, near Minersville.

Chauncey.—Work is resumed at this mine after an idleness of some time in making extensive improvements, including a plane 3,500 ft. long, from the breaker at the Delaware, Lackawanna & Western Railroad below Avondale to the mountain side.

Enterprise.—The immense washery at this colliery, near Tamaqua, which has been in construction several months, is almost completed and additions have been made to the original plans which will bring the capacity to 1,000 tons daily. To convey the coal dirt from the banks to the washery, a tramway, 3,000 ft. long and 150 ft. high, has been built. Upon it is loaded the dirt which is poured into the washery at the rate of a ton a minute.

Green Ridge Coal Company.—The breaker of this company, near Scranton, was destroyed by fire December 3, with the boiler and engine houses, blacksmith and car sheds entailing a loss of $110,000.

Lehigh Valley Coal Company.—This company makes the following statement for October and the 11 months of its fiscal year from December 1 to October 31:

	October.	11 Months.
Earnings	$2,138,414	$19,642,095
Expenses	2,172,936	20,165,069
Net loss	$34,522	$522,974

For the 11 months there was an increase of $3,146,045 in earnings; an increase of $2,853,161 in expenses; and a resulting decrease of $292,884 in the net loss from operations.

New Boston.—The work of rebuilding this breaker at Tamaqua will begin shortly. The new breaker will be one of the finest in the region. About 400 men and boys will be given employment.

State Line & Sullivan Railroad Company.—This company, which operates the mines at Bernice, where a strike has been in progress many months, has agreed to pay the advance in wages asked by the miners, and take back all the men, excepting 4.

Williams Coal Company.—This company at Pottsville has posted notices to the effect that it will abandon its large colliery.

BITUMINOUS COAL.

All of William Davis' property at Naomi, between Bellevernon and Fayette City, has been purchased by the National Tube Company. Options on other properties in the vicinity are also being paid off. It is said the purchase is for a coal road through to the railroad and river. This company recently purchased 165 acres of coal land in Washington township from Michael Croushore for $100,000. In order to reach the coal the old workings of the Tremont Mine will be traversed and a road built back to Arnold City.

Sharon Coke Company.—This company will begin the erection of a large number of by-product coke ovens at a near date, costing, it is stated, about $1,000,000. The coke will be used in the blast furnaces of the Sharon Steel Company.

SOUTH DAKOTA.

LAWRENCE COUNTY.

(*From Our Special Correspondent.*)

American Mining Company.—It is stated that this company in the Ragged Top district is negotiating

for the property of the Spearfish Mining Company, and that belonging to Ed. Hanschka, of Deadwood, and W. O. Morrison and brother, of Colorado City, Colo., all adjoining the American Company's ground. The American Company already controls about 2,000 acres of ground. It is developing the lower quartzite by a tunnel about 1 mile long. The Spearfish Company is making plans to build a larger plant of about 300 tons daily capacity, to take the place of the mill burned down.

Black Hills Belt Development Company.—It has been decided to cross-cut at the present level, 700 ft. The company is looking for the Homestake extension on the south.

Dakota Mining Company.—The second cleanup has been made at the new cyanide plant in Deadwood amounting to over 300 oz. The plant is treating 75 tons per day. Ten additional stamps are being installed, increasing the capacity to 125 tons daily. The ore comes from the Portland district.

Gold Hill Company.—The shaft in Ragged Top district has nearly reached lower quartzite. Thomas Goodman, of Portland, is general manager and the stockholders reside at Omaha, Neb.

Hidden Fortune Company.—Work on the big stamp mill will start this month at Belle Fourche. Sufficient ore has been blocked out on North Lead Hill to warrant the erection of a plant.

Two Johns.—A diamond drill is testing the lower ore measures of a large tract of mining ground at Crown Hill station. C. A. Hallam, of Chicago, owns most of the stock. Albert Holmes, of Deadwood, is general manager.

PENNINGTON COUNTY.

(From Our Special Correspondent.)

Black Hills Copper Company.—The shaft at this mine, west of Rochford, is down 750 ft. on an incline, in fair copper and gold ore.

Columbia Gold Mining Company.—The officers are: President, L. V. Schneider, Salem; vice-president, Herman Ellermon, Yankton; secretary, E. A. Ricker, Deadwood; treasurer and general manager, John Mundt, Sioux Falls; attorney, N. K. Griggs, Lincoln, Neb.; consulting engineer, W. D. Parker, Deadwood. The company has started developing an old property at Rochford.

Copper Cliff Company.—This company is preparing to ship graphite to its concentrating plant at Chicago, Ill., in December.

Elizabeth Mining Company.—The 40 stamps in the new mill are ready, and 20 are dropping on ore. The clean-ups made have averaged about $3 per ton gold on the plates. The tailings are saved and will be cyanided.

Golden Slipper.—A new steam hoister has been installed at this mine, 4 miles east of Hill City, capacity 800 ft. The mine is paying development expenses.

TENNESSEE.

Cumberland Coal and Coke Company.—This new company, of which Nathaniel Baxter, Jr., will be president, is composed largely of western men, St. Louis capital being prominent. The company's coal lands are on the Cumberland plateau along the line of the Tennessee Central Railway Company. The company's holdings comprise 345,000 acres with 8 large coal mines in operation.

UTAH.

(From Our Special Correspondent.)

Bullion Settlements.—The settlements at Salt Lake City for the week ending November 30 for bullion, gold bars and cyanides amount to $129,700.

BEAVER COUNTY.

(From Our Special Correspondent.)

Butte & Beaver.—This new company, backed entirely by Montana capital, owns 14 claims south of the Majestic Company's O. K. Mine, near Frisco. H. Jefferson is manager and is now at the mine.

Horn Silver.—This property forwarded 65,000 lbs. of first-class ore to the Salt Lake Valley smelters during the week ending November 30.

Majestic.—The 5 car-loads containing 172,240 lbs. of copper ore sold under controls in Salt Lake City showed 39.1 per cent copper with a little silver and gold. The management intends forwarding another shipment before Christmas. The mine is looking well.

IRON COUNTY.

(From Our Special Correspondent.)

Alice.—James Muldoon is working 4 men on this property at Stateline.

Horse-shoe.—The usual amounts of cyanides are forwarded regularly from this mine just across the Utah-Nevada line. A new cross-fissure has been opened that produces good ore.

Margaret.—The management of this property adjoining the Johnny Mine in Stateline district is drifting both ways from the shaft on 5 ft. of ore that runs $5 in gold per ton.

JUAB COUNTY.

(From Our Special Correspondent.)

Tintic Ore Shipments.—The shipments for the week ending November 30 are: Ajax, 1 car; Carisa, 12; Gemini, 15; Godiva, 3; Grand Central, 4; Lower Mammoth, 4; Mammoth, 9; May Day, 2; South Swansea, 6; Tesora, 3; Uncle Sam Consolidated, 5; Victor, 3; West Morning Glory, 1; Yankee Consolidated, 12; total 80 cars; in addition 4 cars concentrates were shipped from the Tesora Mill.

The total number of cars shipped from each mine in November are as follows: Ajax, 3 cars; Alaska, 6 cars; Carisa, 51 cars; Eureka Hill, 13 cars; Gemini, 61 cars; Godiva, 8 cars; Eagle and Blue Bell, 6 cars; Grand Central, 16 cars; Lower Mammoth, 16 cars; Mammoth, 29 cars; May Day, 13 cars; South Swansea, 13 cars; Tesora, 8 cars; Uncle Sam Consolidated, 15 cars; Victor, 9 cars; White Cloud, 1 car; West Morning Glory, 1 car; Yankee Consolidated, 26 cars; total 295 cars; Tesora Mill concentrates, 17; total, 312.

MILLARD COUNTY.

(From Our Special Correspondent.)

Utah Sulphur Company.—This company under the superintendence of J. H. McFarland, operating near Black Rock in the Gordon district, has 26 men employed and is shipping about 300,000 lbs. of sulphur every month to the Las Vegas plant in New Mexico.

SALT LAKE COUNTY.

(From Our Special Correspondent.)

Bingham Shipments.—The following are the shipments from Bingham for the week ending November 30: Acme, ore, 55,360 lbs.; Columbia, ore, 63,370 lbs.; Phoenix, ore, 54,420 lbs.; Tiewauke, 51,500 lbs. concentrates.

Bingham Consolidated Mining and Smelting Company.—This company shipped 200 tons matte to the Butte & Boston Smelter in Montana and 60 tons to the Highland Boy Smelter in Salt Lake Valley for the week ending November 30.

Grizzly and Lavina.—The control of these mines has passed to local investors who have joined H. C. Wallace in the enterprise and will form another consolidation. The consideration amounts to nearly $100,000. The mines are at Alta and are both opening up a nice quality of ore. A shipment of 48,900 lbs. was sent to the Salt Lake Valley smelters for the week ending November 30.

Regulator.—This mine at Alta is looking well. J. S. Johnson, the owner, sent down 29,680 lbs. of ore to the Salt Lake Valley smelters this week.

Utah Consolidated.—This company forwarded to the Eastern market about 95 tons of copper, gold and silver bullion from its smelter in Salt Lake Valley for the week ending November 30.

SUMMIT COUNTY.

(From Our Special Correspondent.)

Park City Shipments.—The following are the shipments for the week ending November 30: Quincy, ore, 1,247,490 lbs.; Ontario, ore, 1,165,120 lbs.; Daly-West, ore and concentrates, 1,549,030 lbs.; Anchor, concentrates, 209,600 lbs.; Silver King, ore and concentrates, 1,520,400 lbs.

Daly-Judge Mining Company.—This company, owning property near Park City, is formed under the laws of New Jersey. Its officers are: H. Otto Hanke, Cincinnati, O.; L. Hollingsworth Wood, Mount Kisco, N. Y.; A. Fowler, Salt Lake; W. B. Goodwin, New York City; Geo. W. Rurode, of Jersey City. The capitalization is $15,000 divided in $1 shares. John J. Daly is agent and attorney in Utah for the company.

Superior Group.—These claims located on Bonanza Flat south of Park City have been bonded by M. E. A. Saffington and others for $105,000, and a force of men is to be put at work developing at once.

TOOELE COUNTY.

(From Our Special Correspondent.)

Stockton Shipments.—The Ophir shipped 1,184,200 lbs. of concentrates and the Hidden Treasure 70,680 lbs. of ore for the week ending November 30 to the smelters in the Salt Lake Valley.

Honorine Mining and Milling Company.—Incorporation papers were filed in Salt Lake City on November 26. The capitalization is $2,500,000, divided into shares of the par value of $5 each. P. S. Kimberly, president, of Sharon, Pa., is credited with 202,500 shares. C. H. Scheu, vice-president, 92,500; Walter G. Filer, secretary, 40,500; M. H. Walker, 25,000; W. F. Snyder, director, 27,000, and T. Ellis Brown, 15,500. The company owns the Honorine, Quandry No. 2 Great Basin, Emerald, Homestead, Gov. Murray, Boston No. 2, First National, West Extension, St. Patrick, Contention, Victoria, Buckeye, Hercules No. 2, Sunflower Gulch, Fraction, Wedge, Little Anna, Miriam, Texas, Marjorie and the Great Basin mill-site, all located at Stockton.

WEST VIRGINIA.

MINERAL COUNTY.

Blaine Coal Company.—A Philadelphia syndicate has purchased the mines and plant of this company, at Blaine, on the West Virginia Central Railway, 6 miles south of Piedmont. The coal lies in Garrett County, Md., but the tipple is in West Virginia, the plane crossing the Potomac river on a steel bridge, which is used also by the Faherty Coal Company. The purchasers will take possession soon and enlarge the plant so as to treble the output.

FOREIGN MINING NEWS.

AFRICA.

RHODESIA.

Rhodesia Chamber of Mines.—This organization reports for September that four mines—the Globe & Phœnix, the Dunraven, the Selukwe and the Surprise—were working in Matabeleland, and two—the Alice Proprietary and the Rezende—in Mashouland. The total bullion product for the month was: From mill, 12,912 oz.; from cyaniding tailings, 1,046 oz.; total, 13,958 oz., equal to 11,818 oz. fine gold, or $244,281. The total tonnage treated in mill was 18,980 tons; tailings treated by cyanide 3,974 tons. The average result was $12.87 per ton milled.

The gold output for October is reported at 14,503 oz. crude, which brings the total for the 10 months ending October 31 up to 140,480 oz., against 73,273 oz. for the corresponding period in 1900; an increase of 67,207 oz. The total for the 10 months this year was equal to 125,027 oz. fine gold, or $2,584,308.

TRANSVAAL.

Bonanza, Limited.—This company reports results for October, received by cable from Johannesburg, as follows: From mill, crushed, 6,148 tons; obtained, 3,397 oz. gold; from cyanide and slime works, 2,345 oz. gold; total, 5,742 oz. gold. Ten new stamps (making 50 in all) commenced working on November 2.

Crown Reef Gold Mining Company.—By permission of the military authorities this company has been added to the list of those operating on the Witwatersrand. Work at the mine and mill began on November 20.

Geldenhuis Deep, Limited.—A cablegram has been received from Johannesburg, advising the following results for October: Number of stamps working, 65; time of working, 29 days 17 hours; tons crushed, 8,100; yield in fine gold from mill, 2,631 oz.; sands and concentrates treated by cyanide works, 6,328 tons; yield in fine gold from sands and concentrates, 961 oz.; slimes treated, 2,550 tons; yield in fine gold from slimes, 198 oz.; total yield, 3,790 oz. fine gold. The estimated profit was £6,300.

Robinson Gold Mining Company, Limited.—A cablegram has been received from Johannesburg advising the following results for October: 60 stamps working, crushed 8,092 tons; yield from mill, 4,469 oz.; yield from tailings by cyanide, 2,032 oz.; total, 6,501 oz. fine gold. The net profit was £17,738.

AUSTRALIA.

VICTORIA.

Gold Production.—The Mines Department reports the output of gold in September at 72,193 oz. crude. For the 9 months ending September 30 the total was 572,391 oz., against 580,083 oz. for the corresponding period in 1900; showing a decrease of 7,692 oz. this year.

MEXICO.

MICHOACAN.

El Oro Mining and Railway Company.—The manager reports for September that the 100-stamp mill running 30 days crushed 9,146 tons of ore, the realizable value of which is estimated at $126,142. The total estimated profit for the month is $92,395.

NEW CALEDONIA.

Labor Question.—Various devices are being adopted in order to provide the much-needed supply of labor. Among recent arrivals of laborers reported are 50 from British India. A number of Dalmatians, who are accustomed to mining work, have also arrived.

Societe Le Nickel.—It is announced that this company will soon proceed with the construction of its new blast furnaces for reducing nickel ores.

NEW ZEALAND.

Exports of gold and silver for September and the 9 months ending September 30 are reported by the Mines Department as follows, in ounces:

	Gold.		Silver.	
	1900.	1901.	1900.	1901.
September	41,873	51,078	29,307	49,049
Nine months	284,629	330,663	233,321	369,304

The increase in gold this year was 46,034 oz.; in silver, 135,983 oz. The gold bullion exported this year was equal to 300,234 oz. fine gold, or $6,205,839.

SOUTH AMERICA.

BRITISH GUIANA.

The gold production of the colony in October, on which royalty was paid, is reported by the Mines Department at 9,678 oz., against 10,492 oz. in October, 1901; showing a decrease of 814 oz. this year.

MINING STOCKS.

Complete quotations will be found on pages 774, 775 and 776.

New York. Dec. 6.

Professional bears have again raided the copper shares, and prices in consequence have touched low-water mark. Experienced operators, however, do not expect a continuance of this policy, but rather anticipate a rise that will squeeze the "shorts" severely.

The selling of Amalgamated was largely in 1,000-share lots at widely fluctuating prices, owing partly to a new crop of rumors regarding the metal market. On Friday last, when over 142,000 shares changed hands, the price was up to $79 1-2, but on Saturday it fell to $72 1-2, and on Tuesday, this week, it made the low record of $71 1-2. Less than six months ago the stock touched $130. This fall of 58 1-2 points is due to several reasons, among them reduced dividends on shares which the company holds. These are shown below, the dividends declared this year being compared with 1900:

Issued Stock.	1900.	1901.	Decrease.	Per ct.
Anaconda	$4,800,000	$3,900,000	$900,000	18.7
Boston and Montana	6,450,000	5,250,000	1,200,000	18.6
Butte and Boston	1,000,000	600,000	400,000	40.0
Parrot	1,379,100	1,264,175	114,925	8.3
Total.	$13,629,100	$11,014,175	$2,614,925	19.2

Consequently the Amalgamated Company had to reduce its own dividend from a rate of 8 to 6 per cent per annum on its issued capital of $153,887,000.

Dealings in Anaconda were only moderate. Prices fell sympathetically with Amalgamated, however, and on Saturday last broke the low record at $30, which is 24 1-4 points below last April's high mark. This drop was caused partly by a reduction in the annual dividend rate from a 16 to a 10 per cent basis.

Curb coppers were weak also, Tennessee selling down to $10 7-8, and Union, of North Carolina, at $4 3-4. Buying of White Knob, of Idaho, was reported at $21 3-4@$21.

Little more has been done in the California section. Standard Consolidated was firm at $4 on sales, and Brunswick at 14c. Trading in Quicksilver common is noted at $4 1-4@$4 in small lots.

The Comstocks are soft, owing to the collection of some new assessments. Among the transactions noted are Consolidated California and Virginia at $1.65@$1.75; Ophir, 76c.; Potosi, 35c.; Hale & Norcross, 20c., and Best & Belcher at 13@15c.

Comparatively little is being done in Cripple Creek, Col., shares, as the Western market shows a better tone and holders anticipate higher prices. The gold output of the district is growing, and in November is reported to have been the biggest on record, over $2,500,000. Dividends are large. Of the shares sold Elkton Consolidated, which has just declared a 4c. quarterly dividend, sold at $1.45; Isabella, the most speculative stock in the list brought 35@36c., the lowest prices in a long time.

Auction sales were 100 common shares Republic Iron and Steel Company at $16; 5 shares Standard Oil Company, at $697 per share; 38 common shares United States Steel Corporation at $43, and 17 preferred shares at $93 1-4; 40 shares Issaquah Coal Company at $23 5-8; 230 shares Pennsylvania Furnace Company at $32, and 100 shares Markeen Copper Company, of Arizona, at 75c. per share.

The United States Reduction and Refining Company, of Colorado, has just declared its first quarterly preferred dividend of 1½ per cent ($60,000) from the net earnings for the quarter ending October 31st, 1901, payable January 1, 1902. This is the consolidation formed some months ago of the Union Gold Extraction Company, Colorado-Philadelphia Reduction Company, Standard Milling and Smelting Company, and the Metallic Gold Extraction Company, all of the Cripple Creek District, Colo. The United States Company has a capital of $6,000,000 in common stock, and $4,000,000 in preferred stock; par each, $100, and has also $3,000,000 in 6 per cent bonds. To keep alive these bonds the company adds yearly to the sinking fund $50,000, plus interest. The stock has been sold on curb at $37½@$38 for the common, and $68½@$69 for the preferred, while the bonds are quoted around $86.

Boston. Dec. 4.

(From Our Special Correspondent.)

The announcement of the so-called South Range consolidation fell flat in the market and prices of the two stocks concerned declined after the official plan was made public. As a matter of fact Copper Range has lost $6 in the week to $64 and Baltic $5 to $43. At the last moment Trimountain was left out of the deal for reasons best known to the promoters, although it is stated that satisfactory terms could not be arranged. Heretofore Trimountain was figured to be worth as much as Baltic. This much can be said, that the Baltic has been producing for over a year, while Trimountain has not reached the productive stage, although it will do so very early next year.

The queer capers displayed in Amalgamated and the uncertain condition of the metal market have rendered the copper shares lifeless, but they appear to be in a position to quickly respond to any favorable developments in the situation. It is unquestionably true that if the Amalgamated Company had never been formed and copper allowed to remain, a material market, Boston copper stocks would be selling at better prices and would be in greater demand than at present. A bright broker remarks: "We cuss the day that Amalgamated was born."

Mr. Thomas W. Lawson has put out several effusions on the market, and particularly on Amalgamated. He is now preparing another one it is said. It seems to be established that an immense amount of copper has been sold at or near present prices and negotiations are said to be pending now for a still larger amount. This ought certainly to clear the market up in good shape. Boston & Montana stockholders are feeling bitterly disappointed at seeing their stock selling on a basis of less than $300 per share. It was turned over to Amalgamated on a basis of $500 per share. The most bitter disappointment, however, is the reduction of the dividend to $5 which cuts it in half. This means a difference of $3,000,000 to the Amalgamated Company. Tamarack has lost $25 in the week to $260, notwithstanding the regular $10 semi-annual dividend was declared.

Par of the new Copper Range Consolidated Company will be $100 and the number of shares 285,000. Of these 35,000 shares have been underwritten and will be offered to Copper Range and Baltic stockholders at $40 per share. Copper Range shareholders will receive 150,000 shares of the new company for the present 100,000 and Baltic 100,000 for the present 100,000 shares. When a majority of these two stocks are deposited, depositors of record December 20 will be privileged to subscribe for one consolidated share for six now held, at $40. Payments are to be made $8 January 6, $20 February 6, and $12 March 6, 1902. The company will realize $1,400,000 for the new stock, less expense and underwriters' commission.

But six Lake Superior copper mining companies pay dividends out of the 36 listed in this market. These six will have paid $7,496,900 this year against $9,798,000 last year and $12,318,000 in 1899. The small total is due to the fact that Calumet & Hecla changed its quarterly dividend periods, being but three payments of $15 each this calendar year. The four Montana mining companies disbursed a total of $11,014,175 this year, against $13,585,100 last year. The reduction here is due to the Boston & Montana paying but $35 per share, against $43 last year. The Butte & Boston paid but $3, against $5. The Anaconda's disbursement is $900,000 less through the reduced dividend rate.

Salt Lake City. Nov. 30.

(From Our Special Correspondent.)

The week on the Salt Lake City Mining Exchange closed with total dealings of 438,544 shares. The market has been very unsettled throughout the week.

The directors of the Tesora Company held a meeting on November 25th and levied an assessment of 20c. per share, or $80,000. The company's mine is at Tintic.

The annual meeting of the Savanic Company was held on November 25. H. L. Pickett is president; J. Miller, vice-president; M. M. Miller, secretary and treasurer. S. H. Courtenay and Andrew Sorensen were the only other directors appointed. The mines are in the southern part of the State.

San Francisco. Nov. 30.

(From Our Special Correspondent.)

The market has been steadier this week and a fair amount of business was done, notwithstanding the interruption caused by the holiday on Thursday.

Some quotations noted are: Consolidated California and Virginia, $1.65; Ophir, 76c.; Silver Hill, 32c.; Caledonia, 22c.; Hale & Norcross, 18c.; Mexican, 17c.; Best & Belcher, 15c.; Sierra Nevada, 8@9c.

Annual meetings of the Comstock mining companies will be held in December, as follows: 3d, Mexican; 11th, Lady Washington; 16th, Gould & Curry; 18th, Ophir and Andes; 24th, Hale & Norcross, and 26th, Alta.

On the Producers' Oil Exchange prices were steady, but business was affected somewhat by the holiday and its amount was only fair. Some prices noted are: Kern, $5@$5.25; Monte Christo, $1.65@$1.75; Sterling, $1.20; Four Oil, 45c.; Reed Crude, 34c.; Oil City, 22c.; Monarch of Arizona, 20c.; Apollo, 18c.

The San Francisco Oil Exchange has voted formally to dissolve and close up its affairs. This exchange practically went out of business some time ago.

London. Nov. 24.

(From Our Special Correspondent.)

The amount of business done in the mining market continues to be very small. The South African section has had a short spell of brightness due to the fact that the reopening of the Rand has now become a sure, though slow, affair. Every week we hear of additional stamps starting and of further permits to return issued. It appears that just as many people are being allowed to return to the Rand as can be fed by the imported supplies, and as can be protected by the Army, with the least possible trouble. I hear that there is any quantity of new schemes ready for flotation when a normal state of peace returns. The Transvaal is well supplied with useful minerals and these are ready for opening up. A few weeks ago I mentioned that the Smelting Company of Australia, Limited, had been revived as the Smelting and Refining Company of Australia, Limited, and that 150,000 preference shares of £1 each in the new company had been offered to the public for subscription. I hear now that the public response was very meagre and that the underwriters have been called on to put up practically the whole of the capital they guaranteed. I am afraid the immediate future of the company is not very promising, for most of this cash will eventually have to go to pay off debts of the old company unless the directors can induce the creditors to stand aside for a time. The question still remains, however, as to whether ore can be bought that can be treated at a profit. The works are in good condition and are of first-class order, besides which the promoters are sanguine of success; but these two points in the scheme's favor are useless if there are no ores to treat. I have often wondered why the old company did not remodel the works to make them capable of treating the copper and nickel ores of New Caledonia. The works are not far from Newcastle, New South Wales, a port and coal district, and the freight of concentrated ores and mattes from New Caledonia would be much less than at present when the products are shipped to England. This idea may yet be taken up by the directors of the present company.

I have often referred during the past two years or so to a company called the Foreign Syndicate, which has in its time introduced the shares of several American wildcats, notably the Arizona Copper Syndicate, the International Zinc Company and the Liquid Air Power Company. The syndicate is now introducing the shares of the Camp Bird Extension Mining Company. This project has been decided on because the Camp Bird, of Ouray, Colo., has been before the English investing public for some time, though the option of the English company to purchase has never been exercised. The syndicate has acquired some sort of property adjoining the Camp Bird, but nothing is said to show that any ore is found on it. However the $1 shares are being peddled out at 2s. to anyone foolish enough to part with their money.

Paris. Nov. 24.

(From Our Special Correspondent.)

The copper shares are the most active at present, and there is much discussion over the condition of the metal market. Our prophets continue to predict a fall in prices and to insist that it is impossible for the Americans to maintain them much longer. Most of them, however, base their forecasts upon the state of business here, and fail to take into account or even to comprehend the activity which prevails on your side of the water.

There has been this week a slight revival of interest in the Transvaal gold stocks. One cannot say that prices have improved, but there are more inquiries and a firmer tone to the market. In part this may be due to recent utterances of the British Government; but more probably to the report that more mines are to be permitted to start up. It must be remembered that there are many holders of these stocks who watch the market very closely, and are ready to come in at the first sign of activity. People of this class are hardly ready to sell yet, but their inquiries do affect the Bourse to some extent. There are some also, who are ready to buy, if they can get prices low enough:

M. Francis Laur, mining engineer and publisher of a mining paper, who is well known to you, has addressed a formal petition to the Senate in relation to American competition, and especially to the United States Steel Corporation. His memorial sets forth the great injury which the consolidation of American steel interests may work to French industry, and urges that duties on iron and steel coming from the United States should be increased to a point which will shut out all imports into France. The committee to which the petition was referred has reported that the complaint is well founded, and proposes to refer the petition to the President of the Council, to be submitted to the Minister of Commerce for him to consider by what means the French metal industry may be defended.

Mr. Paul Leroy-Beaulieu has also taken up the question of American competition, and has published an article on the subject in *l'Economist Francais* As you know, M. Leroy-Beaulieu has been most unfavorably disposed towards your country since the Spanish war, and it will be interesting to see his presentation of the case. AZOTE.

COAL TRADE REVIEW.

New York. Dec. 6.

ANTHRACITE.

The weather has been cold and stormy enough during the week to cause active retail buying in all anthracite consuming territory, and the only complaints heard from dealers are about the scarcity of certain sizes or the difficulty of getting coal promptly, owing to the poor car supply. The movement of coal up the lakes from Buffalo is practically over for the year and the lake movement of soft coal can last but a few days longer. A large number of cars will be freed by the closing of lake navigation, but it remains to be seen whether the general car supply will be much affected thereby. Anthracite producers report very little improvement yet.

In the Northwest coal is in demand. The last boats have arrived at Duluth and Superior and dealers are now wondering how long their supplies will last. The arrivals during the last two weeks of navigation were fairly heavy, but nothing remarkable. The shipments from the docks are about of average size. In Chicago territory the last lake cargoes are expected at the docks this week. The total arrivals by water for the season will probably not exceed 975,000 tons, about 60,000 tons more than last year, but something like 300,000 tons below the 1899 figures. The shortage is not as great as many men in the trade anticipated, and the supplies on dock may be sufficient to last through the winter. With the closing of lake navigation, arivals of all-rail coal are increasing and dealers dependent on such arrivals find less trouble in making prompt shipments. Demand is fairly good. Nut coal, as has been the case for 3 or 4 years past, is the size most wanted. Along the lower lakes and in Canadian territory business is seasonably active. The movement of coal through the canals has probably stopped for the winter. Navigation for coal barges on the Hudson is reported dangerous above Rondout.

Along the Atlantic seaboard dealers report business generally good, grate coal and the steam sizes are in most demand. Stocks at points beyond Cape Cod are thought to be ample and dealers look for a prosperous winter's business. Car supply, though reported no better, is improving, judging from the fact that two railroads have lifted embargoes in shipments to points off their own lines. Prices for all grades of coal are generally firm and unchanged. We quote for free-burning white ash, f. o. b. New York Harbor shipping ports: Broken, $4; egg, $4.25. stove and nut, $4.50.

BITUMINOUS.

The Atlantic seaboard bituminous trade continues as active as car supply at the mines will permit. Demand is heavy and the needs of many consumers are pressing. Car supply is thought to be a little better, as the main line roads are recognizing the distress caused by the shortage and in the last few days have been producing results. The improvement may or may not last, only the railroads know, but appearances are in favor of the railroads keeping up their efforts. The car supply has been so short that it has limited speculative buying to a great extent. Producers were not willing to take the advanced prices offered by outside buyers while so many of their regular customers were in actual need of coal. What coal has been sold in a speculative way has been of the poorer grades and has brought $3@$3.25, f. o. b. New York Harbor shipping ports. The shoal water ports where ice forms early are now out of the market, their last cargoes having been shipped.

Trade in the Far East shows a strong demand. That territory has been helped out recently by arrivals of considerable coal from Chesapeake Bay ports, but from the increasing delays now developed in loading at these ports, it looks as though arrivals from the Chesapeake would fall off; the Far East will consequently soon be giving producers trouble by its increased necessities. Along Long Island Sound consumers continue to call for more coal than producers can give them and the latter are doing their best just to keep regular customers going. New York Harbor trade is calling for a large tonnage, and concerns in the bunker trade have a hard time supplying their necessities. The allotment of coal to the all-rail trade is being cut by producers. Consumers in this trade have had practically all the coal they called for until within a short time, and producers are now not only cutting down shipments, but in some cases suspending shipments entirely for a time in order to help out tide-water business.

Transportation from the mines to the shipping ports is slow and irregular. Car supply averages about 50 per cent of what is wanted; sometimes it is better, then falls off again. In the coastwise vessel market there is a great scarcity of tonnage. The shipping ports are bidding against themselves and raising the rates considerably to get vessels. Many vessels must have taken off-shore business to bring about present conditions. We quote current rates from Philadelphia as follows: Providence, New Bedford and Long Island Sound, $1@$1.05; Boston, Salem and Portland, $1.15; Wareham, Lynn and Newburyport, $1.30@$1.35; Portsmouth, $1.20. Rates from the farther lower ports are 10c. above these.

All grades of coal are selling at full circular figures. The speculative element cuts little figure in prices, as noted above.

Notes of the Week.

The Pennsylvania Railroad Company reports the coal and coke tonnage originating on all its lines east of Pittsburg and Erie for the 11 months ending November 30 as below, in short tons:

	1900.	1901.		Changes.
Anthracite	3,495,369	4,273,557	I.	778,188
Bituminous	18,510,255	18,041,140	D.	469,115
Coke	6,660,231	7,475,588	I.	815,357
Totals	28,665,855	29,790,285	I.	1,124,430

The decrease in bituminous coal has been largely due to short supply of cars and delays resulting from the pressure of traffic.

Birmingham. Dec. 2.

(From Our Special Correspondent.)

There has been no change in the coal situation in Alabama. There is a heavy production, and this condition promises to keep up for some months. There have been no advances in the price of the product, and none are anticipated. The work of developing virgin coal fields in this State is being kept up at a lively rate. The operators in this district have no fears that the consumption of oil as fuel will crowd out coal.

The meeting of the Alabama District, United Mine Workers of America, in Bessemer next week, will play no part in the labor situation as to the coal production. The strike in the Carbon Hill District, which started last July, is still on. A conference between head officials of the Mine Workers and the officials of the Galloway Coal Company, at Carbon Hill, looking to a settlement of the strike availed nothing during the past week. The Knights of Labor miners are in control of the mines at Carbon Hill. The meeting of the Mine Workers next week in Bessemer is for the purpose of electing officers in their organization. Nothing will be done affecting the contract they hold with the operators.

The coal miners in Alabama in view of the advance noted during the past month in pig iron quotations are expecting an advance of 2½c. on the ton in their wages this month. The advance will bring up the wage scale to the maximum, 55c. per ton. The miners' contract is based on the selling price of pig iron. The minimum price is 45c. per ton for mining, and the maximum 55c.

Cleveland. Dec. 4.

(From Our Special Correspondent.)

The shipment of coal by the lake routes is about over for the year. Some of the shippers here have gone off of the market entirely and others are taking what boats they can find, which are few. Insurance policies on the big steel steamers expire December 5 at noon, and all of these will go to the docks for the winter. There is a small fleet which operates without insurance and these boats will go to the end of the year or as long as cargoes are to be obtained. It is now demonstrated that the shippers will not be able to send to the upper lake ports all of the coal they have sold. Some of the consignees will find themselves short before the opening of the season in the spring. The contracts, however, do not bind the shippers to make deliveries by all rail, although much coal will go that way. Since the haul is much shorter it is expected that a good part of the deficiency will be made up from the Indiana and Illinois coalfields. The coal movement to the lake ports is still hindered by the shortage of cars and the relief long looked for did not arrive in time. The movement of domestic coal is now very heavy and the sales are quite large.

Pittsburg. Dec. 4.

(From Our Special Correspondent.)

Coal.—While a premium is being offered for coal no formal announcement has been made by the Pittsburg Coal Company of an advance in this district. During the week, however, the combination ordered an advance of 25c. for all coal for the western market. It is reported that this increase is likely to be made general. About 12,000,000 bushels of coal were shipped to the southern markets on the last rise. Of this amount the Monongahela River Consolidated Coal and Coke Company, the river coal combination, sent out about two-thirds and the independent producers shipped the balance. The return of a large number of coal boats and barges has resulted in the resumption of operations at a large number of mines on the river.

Connellsville Coke.—Prices of standard Connellsville coke continue firm at $2 for furnace and $2.50@$2.75 for foundry. There is very little change in the situation. Of the 21,833 ovens in the Connellsville Region 19,942 are active and 1,891 idle. The production for the week was 236,527 tons, an increase over the previous week of 372 tons. The shipments for the week aggregated 10,204 cars, distributed as follows: To Pittsburg and river tipples, 3,494 cars; to points west of Pittsburg, 4,911 cars; to points east of Connellsville, 1,799 cars.

Foreign Coal Trade. Dec. 5.

Exports of coal from the United States for the 10 months ending October 31, are reported by the Bureau of Statistics of the Treasury Department at 1,768,684 tons anthracite and 4,634,324 tons bituminous, against 1,394,073 and 5,178,524 tons respectively in the corresponding months of 1900; showing an increase of 374,611 tons anthracite and a decrease of 544,200 tons bituminous this year. The distribution of these exports was as follows:

	1900.	1901.		Changes.
Canada	4,511,173	4,448,828	D.	62,345
Mexico	568,220	484,572	D.	83,648
West Indies	589,763	601,817	I.	12,054
South America	171,795	242,313	I.	70,518
Central America	7,062	12,529	I.	5,467
Philippine Islands	53,067	62,333	I.	9,266
Europe	544,745	496,820	D.	47,925
Other countries	126,772	53,796	D.	72,976
Total	6,572,597	6,403,008	D.	169,589

Of the exports to Europe this year 28 tons went to Great Britain; 24,188 tons to Germany; 189,754 tons to France; and 282,850 tons to other countries, chiefly Italy.

Exports of coke for the 10 months this year were: 322,636 tons, against 298,704 tons in 1900; an increase of 23,932 tons this year. This coke goes chiefly to Mexico and Canada.

Exports of coal from Baltimore in November were the largest since July, and amounted to 35,966 tons. Of this total France received 9,764 tons, and Mexico, 7,887 tons. There was also shipped to Mexico 3,100 tons of coke. The total exports of coal from this port since January 1, was 465,087 tons. The best month was March with 59,540 tons, while May and January closely followed with 56,774 tons and 56,199 tons respectively. Quantities of this coal were destined to France, Italy, British South Africa, Central and South America and the West Indies.

Messrs. Hull, Blyth & Co., of London and Cardiff report under date of November 23, that while the Cardiff coal market remains at last week's prices, Monmouthshire descriptions have again risen in value; small coals are somewhat easier. Prices are: Best Welsh steam coal, $4.20@$4.32; seconds, $3.96 @$4.02; thirds, $3.90; dry coals, $4.08@$4.20; best Monmouthshire, $3.78@$3.84; seconds, $3.54; best small steam coal, $2.64@$2.76; seconds, $2.40@$2.52; other sorts, $2.16.

SLATE TRADE REVIEW.

New York. Dec. 6.

The list of prices per square of No. 1 slate, standard brand, f. o. b. at quarries in car-load lots, is given below:

Size, Inches	Monson or Br'nville.	Bangor.	Bangor Ribbon.	Alb'n or Jackson Bangor.	Chap'n Keystone.	Peach Bottom.	Sea Gr'n.	Unfad'g Green.	Red.
	$.	$.	$.	$.	$.	$.	$.	$.	$.
24 x 14	6.50	3.50	3.00	3.25	...	5.30	3.00	...	....
24 x 12	6.60	3.50	3.00	3.25	4.00	5.50	3.00	3.75	....
22 x 12	6.60	3.50	3.25	3.50	...	5.50	3.00	3.75	....
22 x 11	6.50	3.75	3.25	3.50	4.00	5.50	3.00	4.00	....
20 x 12	6.90	3.75	3.25	3.50	...	5.50	3.00	3.75	....
20 x 11	6.80	...	...	3.75	...	5.50	3.00	...	....
20 x 10	6.80	4.25	3.50	3.75	4.00	5.60	3.00	4.25	10.50
18 x 12	6.80	3.75	3.25	3.50	...	5.50	3.00	3.75	....
18 x 11	7.00	...	...	...	...	...	3.00	3.75	....
18 x 10	7.00	4.25	3.50	3.75	4.00	5.60	3.00	4.00	10.50
18 x 9	7.00	4.50	3.50	3.75	4.00	5.60	3.00	4.25	10.50
16 x 12	6.80	3.75	...	3.50	...	...	2.90	3.75	....
16 x 10	7.00	4 00	3.50	3.75	4.00	5.60	2.90	4.00	10.50
16 x 9	7.00	4.25	...	3.75	4.00	5.60	2.90	4.25	10.50
16 x 8	7.00	4.25	3.50	3.75	4.25	5.60	2.90	4.25	10.50
14 x 10	6.60	3.75	3.25	3.25	...	5.50	2.70	3.75	10.50
14 x 9	6.50	...	...	...	...	...	2.70	3.75	10.50
14 x 8	6.60	3.75	3.25	3.25	4.00	5.30	2.70	4.25	10.50
14 x 7	6.40	3.75	3.25	3.25	3.75	5.30	2.50	4.25	10.50
12 x 10	5.75	...	...	...	...	...	2.50	3.25	....
12 x 9	5.60	...	...	...	...	...	2.50	3.25	....
12 x 8	5.50	3.50	...	3.00	...	5.00	2.50	3.50	9.00
12 x 7	5.00	3.25	...	3.00	3.25	5.00	2.00	3.50	9.00
12 x 6	4.80	3.25	...	3.00	3.25	4.85	2.00	3.50	8.50

A square of slate is 100 sq. ft. as laid on the roof.

Quarrymen and dealers are busy stock-taking, preparatory to working up spring trade. Frosty weather has curtailed roofing slate buying, but inquiries for deliveries early next year are frequent. Prices hold firm, as stocks at quarry of merchantable sizes are small. Mill stock is moving moderately well at better prices.

IRON MARKET REVIEW.

NEW YORK, Dec. 6.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending Dec. 7, 1900. F'ces.	Tons.	Dec. 6, 1901. F'ces.	Tons.	From Jan., '00. Tons.	From Jan., '01. Tons.
Anth and coke	171	207,950	237	313,925	12,648,937	14,373,499
Charcoal	30	8,150	22	7,150	361,495	373,055
Total.	201	216,100	259	321,075	13,010,432	14,746,554

Our local letters show little change in the general condition of the market. Business continues very active and the prospects seem so good that many inquiries are already being made about supplies for the second half of 1902. In almost all lines there is no apparent check in the volume of new business. The only drawback is found in the delays caused by railroad blockades and short car supply, whch are interfering with the operations of many plants in Western Pennsylvania and Ohio by cutting off temporarily supplies of fuel, ore, etc. The same causes are causing trouble in deliveries of finished material.

Birmingham. Dec. 2.

(*From Our Special Correspondent.*)

There is considerable activity in the pig iron market in Alabama notwithstanding the approach of the holidays. Prominent ironmasters in this State announce that the recent advance in quotations has not tended to stop the market, and that there is just as good an inquiry as before, and the demand is just as strong. Secretary-Treasurer J. W. McQueen, of the Sloss-Sheffield Steel and Iron Company, is authority for the statement that there are indications of another advance of 50c. on the ton for pig iron before the end of the year.

Sales are being made in this section on which delivery will be made 6 months hence. There is an inquiry for the product with delivery next May and June. Shipments are steady. The railroads have orders on hand for cars for a large tonnage.

The following quotations are given: No. 1 foundry, $12; No. 2 foundry, $11.50; No. 3 foundry, $10.50@$11; No. 4 foundry, $10@$10.50; gray forge, $10; No. 1 soft, $12; No. 2 soft, $11.50.

The production in Alabama has been improved by the blowing in of furnace No. 4 at North Birmingham, belonging to the Sloss-Sheffield Steel and Iron Company. The following furnaces are expected to go into operation before the end of the year: One furnace at Ironaton, belonging to the Alabama Consolidated Coal and Iron Company; 1 new furnace, belonging to the Republic Iron and Steel Company, at Thomas; 1 furnace at Talladega, belonging to the North Alabama Coal, Iron and Railway Company; 1 furnace at Woodward, belonging to the Woodward Iron Company.

There is much activity in steel circles. Eight of the 10 open-hearth furnaces at the big steel plant at Ensley have been in operation during the past week. There is a big demand for the product, and orders are on hand on which shipments will be made for the better part of next year.

The rolling mills and foundries show no change in conditions, and are all busy. The plant of the Alabama Steel and Wire Company is still working hard. The rolling mill department of the Alabama Tube and Iron Company, at Helena, is doing well. The tube department will probably go on before the end of the year, though there is much work yet to be done in getting ready.

Buffalo. Dec. 3.

(*Special Report of Rogers, Brown & Co.*)

The buying public continues its interest in covering future requirements so far at least as its favorite brands of pig iron are concerned. The past week has been another one of heavy order booking. The largest consumers appear mostly to have covered their wants for the greater part of next year and in many cases through the entire twelve months. Furnaces have been inclined to book freely into the future when buyers desired, wishing to do their share toward preventing an undue rise in prices. It is generally conceded that $15 to $16 at the furnace for 2X iron is a fair price for both producer and consumer. The former is as much interested as the latter in holding prices down to this level. The curtailment of local pig iron production through inability to obtain full coke supply continues to a certain extent. We quote as follows, on the cash basis f. o. b. cars, Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $16.75; No. 2, $16.25; Southern soft No. 1, $16.75; No. 2, $16.25; coke malleable, $16.50; Lake Superior charcoal, $18.50.

Cleveland. Dec. 4.

(*From Our Special Correspondent.*)

Iron Ore.—Shipments of iron ore have been suspended for the season from Duluth, Two Harbors, Ashland, Marquette and Allouez Bay, leaving docks in operation at Presque Isle, Superior and Escanaba only. These ports will send forward small amounts of material for the remainder of this week, after which the season will be at an end. While the figures are not obtainable, as to the season's movement, the single indication, in the increase of 1,700,000 tons from the head of the lake ports over last year, is that the total movement will be considerably in excess of 20,000,000 tons. During the last week of the movement the rates of carriage remained stable although the conditions under which charters were made would have, under ordinary circumstances, demanded that better rates be paid. The surplus of tonnage prevented any such increase. The prices at which ore is quoted on the market do not change from $4.25 on bessemer and $3 on non-bessemer and Mesabi ores.

Pig Iron.—The curtailment of production of pig iron due to the car shortage which brought about a failure of the coke supply, has been so great that serious results are expected. The producers have been compelled to make shipments from their stock piles until these are all but depleted. Future conditions are jeopardized by this practice and it is feared that there will be a failure of supplies at a critical time. The big demand for foundry grades has enabled the producers to demand and receive a better price for No. 2, $15 having been paid in the Valleys. Some big concerns have purchased bessemer for January delivery at $15.25 in the Valley and sales of basic at $15 in the Valley have also been made, both prices being established.

Finished Material.—The market this week in finished material has continued strong and active, sales in all departments having kept up. Structural material has been sold so heavily for delivery during the first half of next year that there is talk now of the producing capacity having been contracted for entirely. The demand has been so heavy that material for immediate shipment is entirely off the market. The price does not change from 1.70c. Rails are also in great demand although many of the steam railroads have about covered their requirements. Many electric lines which are now being projected have as yet to come upon the market and purchase their supplies and it is possible that much construction which would be done must wait until the mills can produce the material. Some of the steam lines have come upon the market early for track supplies and splice-bars have been sold in large quantities. The plate trade has also picked up greatly and ordering is quite heavy. The orders have come from the American Ship Building Company and also from the car-building concerns. The prices are still 1.70c. Bars and sheets are in demand and contracts are still coming in at lively rate with prices unchanged, iron and bessemer steel bars being quoted at 1.50c., Pittsburg, and open-hearth steel bars bringing 1.60c., Pittsburg.

Duluth. Dec. 1.

(*From Our Special Correspondent.*)

Iron Ore.—The last ore cargoes will have left upper lake docks before the middle of this week. The closing business in ore has been slow and difficult, the weather making material very hard to handle through dock. The total shipments of the Duluth & Iron Range road for the year has been about 5,010,000 gross tons, that of the Duluth, Missabe & Northern 3,438,000 and that of the Eastern Minnesota road 1,970,000. This is an increase for the Duluth & Iron Range of 1,000,000 tons, a decrease for the Missabe of 450,000 tons and an increase for the Eastern Minnesota of 410,000. The decrease by the Missabe road is but temporary, and was caused by the reduction of Biwabik's shipments. The great increase of the work of the Duluth & Iron Range, which during single months of the season has shipped to exceed 1,000,000 tons, was due to large sales of Fayal ore last winter. Roughly speaking the shipment of this road has included these totals by mines: Vermilion Range 2,000,000 tons; Fayal 1,700,000 tons; Auburn 450,000 tons; Sparta and Malta 300,000 tons; Genoa 300,000 tons; Roberts, Hale and Kanawha 100,000 tons; Franklin and Union 125,000 tons.

Ore Docks.—A contract for the rebuillding of Dock No. 4, Duluth & Iron Range road, will be let soon. It will be raised 10.5 ft. to a total height of deck of 62 ft. Nine feet of this raise will be below the hinges of the spouts, and 1.5 ft. in the capacity of pockets. All weighing for the Duluth & Iron Range road will hereafter be done at Highland, near the docks, and the immense track scales are now being moved from Tower Junction and elsewhere.

Pittsburg. Dec. 4.

(*From Our Special Correspondent.*)

The local iron and steel market has become rather quiet so far as future business is concerned, but mills are so well filled with orders that prices have not shown the slightest weakening tendency, and are strong all along the line. There is always a let-up at this time of year, as, except for urgent demands, it is considered better to wait until the year's business has been summed up before making further commitments.

The leaders in the iron trade already feel assured that 1902 is going to be one of the best the iron trade has ever had, and in all probability the very best. An immense consumption of iron and steel is assured by the railroads beyond their rail consumption, while a large amount of material will go into new buildings. The demand for structural material for buildings and for railroad and other bridges will doubtless keep the structural mills full of business during the whole year, and with the rail mills equally busy, a large tonnage of steel consumption is assured in these two lines and a good foundation furnished for activity all along the line.

Pig Iron.—The large steel works are fairly well covered for their requirements of bessemer iron for this month, while the furnaces are well sold up, and the business has been confined to small sized lots for immediate shipment or shipment within ten days. So many buyers have been disappointed in getting iron on contracts that this quick delivery business has aggregated a fair tonnage. The price realized ranged from $15.50 to $15.75, Valley furnace, or $16.25 to $16.50, Pittsburg, the regular price for later delivery remaining at $16, Pittsburg. In foundry iron there has been considerable activity and foundries are beginning to inquire for iron for the second half of next year, having already covered for the first half. No. 2 foundry is strong at $15.50@$15.75, Pittsburg. There has been an active demand for gray forge, which is also strong, and $14.75@$15.25, Pittsburg, is still quoted. The basic iron market is rather quiet, as furnaces want more for basic iron than the steel mills are willing to pay. Some of the furnaces are changing from basic to bessemer in order to meet the demand. Basic iron is held at $15.75@$16, Pittsburg.

Steel.—There will not be much steel for sale for next year's delivery in the form of billets, as all the steel mills have finishing mills of their own and figure that these mills will take about all the steel they can make. Prices are therefore very high and buyers are taking hold only for prompt shipment. For delivery this year, 4 by 4-in billets are selling at $28 @$29. Steel bars are in fair demand and mills are so well sold up for several months ahead that they are not making any effort to get new business. Prices are firm and unchanged at 1.50c. Plates are in better demand, some good orders for shipbuilding purposes having been booked within the past week. Tank plate remains at 1.60c.

Sheets.—There is still considerable scarcity in some sizes of sheets, but mills are making good deliveries on most sizes and the market is more settled than it has been since before the strike. For ordinary deliveries mills are quoting on the basis of 3.10c. for No. 28, but for quick shipment of car-load lots in certain sizes as high as 3.25c. is frequently obtained. Galvanized sheets are in good demand and prices are unchanged at 70 and 10 per cent off for ordinary deliveries and 70 per cent off for spot delivery.

Ferro-Manganese.—There continues to be a good demand for ferro-manganese, but prices show no change. Domestic 80 per cent is still quoted at $53.50 and foreign at $50.

Philadelphia. Dec. 5.

(*From Our Special Correspondent.*)

Pig Iron.—The reports from all of our local offices indicate that a strong demand for early deliveries of small lots still exists, at least as early delivery as is possible under existing circumstances. The particular call just at present is for foundry irons of the better grades. For the poorer grades there is but little request, and some shading is noted on a few sales. For forge iron the demand is heavier for early deliveries than for a month, owing, it is explained, to the recent backing of considerable business by a number of our eastern and Middle Pennsylvania mills. In bessemer and basic iron no large transactions have been heard of, although it is known that negotiations are being crowded with a view to securing abundant stock for mid-winter consumption.

Muck Bars.—The latest sales in muck bars indicate an advance of about 0.50c.

Billets.—It is understood that some important negotiations are in progress for steel billets, but those concerned decline to furnish any details or even to contradict certain rumors that the quotations have been advanced 0.50c. within a week for the deliveries asked for. In fact there are several rumors that seem to point to a general advance in billets, but the absolute fact cannot be established.

Plates.—The rumored collapse of the attempted combination of the steel plate interests has not as yet reached market quotations, but it is said to-day to be probable that the stronger producers will now accept a good deal of business for late delivery at prices which are satisfactory to them, and which involve slight concessions. In other words there is some willingness among large manufacturers to quote buyers where large contracts are in the balance.

Scrap.—Scrap holders are very firm in their views and two or three large dealers have refused offers for quite large quantities of heavy stuff rather than sell at the figures named which involve no more than a drop of 50c. per ton.

New York. Dec. 6.

Pig Iron.—The market is very strong. Northern irons command a premium of 50c. per ton over the regular minimum quotation for delivery before March 1. We quote for tidewater delivery: No. IX foundry, $16.15@$16.75; No. 2X, $15.65@$16.15; No. 2 plain, $15.15@$15.65; gray forge, $14.90@$15.40. For Southern iron on dock, New York, No. 1 foundry, $15.75; No. 2, $15.25; No. 3, $14.75; No. 4, $14.25@$14.50; No. 1 soft, $15.75; No. 2, $15.25@$15.50.

Bar and Iron Steel.—Consumption is steady and prices are unchanged. We quote 1.58c. for common bars in large lots on dock; refined bars, 1.63@1.68c.; soft steel bars 1.68c.

Plates.—Demand continues good. It is semi-officially stated that the contemplated consolidation of 4 eastern mills is off. There seems to have been a disagreement about the terms on which the companies should come in. The mills will act in harmony, however, and the plan under which they have been working is to stand for another year. Eastern mills quote for tidewater delivery in car-loads: Tank, 1-4-in. and heavier, 1.78c.; flange, 1.88c.; marine, 1.98c.; universals, 1.78c.

Steel Rails and Rail Fastenings.—Mills are now well supplied with orders for next year. Standard sections are still quoted at $28 at Eastern mills; light rails at $28@$30, according to weight. Spikes are 1.80c.; splice bars, 1.55c.; bolts, 2.60@2.70c.

Structural Material.—Few large contracts have been placed recently. Prices are unchanged. We quote for large lots at tidewater as follows: Beams, 1.75c.; channels, 1.75c.; tees, 1.80c.; angles, 1.75c.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 778.)

New York. Dec. 6.

Heavy Chemicals.—Domestic alkali, high test, continues to sell forward at 77½@80c. per 100 lbs. f. o. b. works, while few sales on spot are reported at a slight advance. Comparatively little is doing in the foreign article, of which the imports into the United States during the 10 months ending October 31, were only 21,981,461 lbs., as against 60,564,276 lbs. in the same period last year. Caustic soda shows practically the same condition, our imports in the 10 months this year being only 3,026,031 lbs., against 6,855,637 lbs. last year. The domestic article, however, is growing in favor, and sales over 1902 and 1903 have been made at $1.90@$1.95 per 100 lbs., f. o. b. works. The recent heavy deliveries of sal soda by domestic makers have depleted stocks, so that prices are generally firmer. The consumption of foreign sal soda shows a falling off as imports in the 10 months ending October 31 were only 3,939,398 lbs., against 4,169,586 lbs. last year. Bicarb. soda is in good request for next year's delivery on basis of present quotations. Bleaching powder continues quiet, as nearly all the large consumers have placed 1902 contracts on basis of prices quoted below. The imports of bleach have been less than last year, amounting in the 10 months ending October 31, to 92,555,194 lbs.,' which compares with 109,572,319 lbs. in the same period in 1900. As consumption continues large the fall in imports shows that our domestic works have increased their capacity materially of late. Chlorate of potash of domestic make shows further sales over next year at $7½@$7¾ per 100 lbs.; foreign is less active, the imports showing quite a falling off as compared with last year. In the 10 months ending October 31, our imports were only 660,943 lbs., against 1,066,834 lbs. in 1900.

Prices per 100 lbs. are as below:

Articles.	Domestic. F. o b Works.	Domestic. In New York.	Foreign. In New York.
Alkali 58%...	77½ @ 80	.....	.....
Alkali 48%...	80 @ 85	.....	.....
Caustic Soda, high test....	$1.90	@$1.95	.....	$2.25	@$2.50
powd. 60%..	.....	2.75	.....
70@74%..	.....	2.85 @ 3.00	.....
98%..	.....	3.25	3.75 @ 4.00
Sal. Soda.....	.55.	.65	.70
Sal. Soda conc.	1.25 @ 1.50	.....	.....
Bicarb. Soba .	1.00 @ 1.10	.....	1.37½@ 1.75
Bicarb. S o d a, extra.....	3.25 @ 3.50	.....	.....
Bleach. Pdr.:			
Eng. prime.	.....	.....	1.75 @ 1.85
Other brands	.....	.....	1.70 @ 1.80
Chl. Pot. cryst.	.....	8.25 @ 8.37½	10.00 @10.25
Chl. Pot. powd.	.....	8.37½@ 8.62½	10.50 @10.75

Acids.—Some sales of 1902 muriatic acid for home consumption are noted on basis of quotations. Sulphuric is in good request, and sales during November were large. Oxalic is still weak and offers of German are reported at $4.87½ over 1902. Blue vitrol in small crystals has been sold around $4⅝ per 100 lbs., but makers who control the market hold at over $4.75.

Quotations are per 100 lbs. as below, unless otherwise specified, for large lots in carboys or bulk (in tank cars), delivered in New York and vicinity:

Acetic, com'l 28%....$1.80	Oxalic, com'l.....5@5.25
Blue vitrol.....4.62½@4.75	Sulphuric, 50 deg., bulk ton. .....14.00@16.00
Muriatic, 18 deg..... 1.50	Sulphuric, 60 deg.....1.00
Muriatic, 20 deg.....1.62½	Sulphuric, 60 deg., bulk .....18.00@20.00
Muriatic, 22 deg.....1.75	Sulphuric, 66 deg.....1.20
Nitric, 36 deg.....4.00	Sulphuric, 66 deg, bulk. .....21.00@23.00
Nitric, 38 deg.....4.25	
Nitric, 40 deg.....4.50	
Nitric, 42 deg.....4.87½	

Brimstone.—Sales from steamer due are noted at $23½ per ton for best unmixed seconds, while shipments are worth $22¾@$23. Best thirds rule $3 lower than seconds. The United States imports in the 10 months ending October 31 were 129,071 tons, against 130,403 tons in the same period last year Only 156 tons of this year's imports were re-exported.

Pyrites.—Sellers are firm in their views as the brimstone market is high, and demand good. Imports are growing, and in the 10 months ending October 31 the United States received 331,820 tons, which compares with 284,373 tons in the same period last year, and 261,495 tons in 1899. Quotations f. o. b. are: Mineral City, Va., lump ore, $4.90 per ton, and fines, 10c. per unit; Charlemont, Mass., lump, $5, and fines, $4.75. Spanish pyrites, 12@14c. per unit, delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46 to 51 per cent of sulphur; American, from 42 to 44 per cent.

Sulphate of Ammonia.—Firm. Demand moderate. Spot and shipments are quoted about the same, $2.82½@$2.85 per 100 lbs., for 24@25 per cent gas liquor.

Nitrate of Soda.—Weaker at $1.90 per 100 lbs. for spot. Next year's deliveries remain at $1.95. The "Cumbal" arrived this week with 44,500 bags, to be delivered on contract. In Europe demand is of a hand-to-mouth character.

Messrs. Mortimer & Wisner's monthly statement of nitrate of soda, dated New York, Dec. 2, gives the following interesting data:

	1901. Bags.	1900. Bags.	1899. Bags.
Imported into Atlantic ports from West Coast S. A., from Jan. 1, 1901, to date.....	1,288,241	1,098,636	915,300
From Europe	.....	2,063	.....
	1,288,241	1,100,701	915,300
Stock in store and afloat Dec. 2, 1901, in New York.....	84,779	35,643	43,723
Boston	1,000	.....	.....
Philadelphia	10,000	.....	1,500
Baltimore	35,000	1,000	1,500
Norfolk, Va.	18,500	.....	.....
Charleston	.....	.....	.....
Savannah	10,000	.....	.....
To arrive, due March 15, 1902....	332,750	310,425	177,500
Visible supply to March 15, 1902.	492,029	347,068	224,223
Stock on hand Jan. 1, 1901.....	13,446	9,586	58,406
Deliveries past month.....	128,032	147,686	131,894
Deliveries since Jan. 1 to date....	1,142,408	1,073,644	926,983
Total yearly deliveries.....	.....	1,176,651	976,592
Prices current, Dec. 2.....	$1.90	$1.75	$1.70 @ 1.72½

Phosphates.—Domestic contracts for 1902 Tennessee rock show a material increase over last year, and some sellers report the largest orders since 1899. Operations in Mt. Pleasant and other fields throughout the State are hindered by the short supply of laborers usual at this season of the year. Moreover, the limited car supply has interfered with prompt railroad dispatch. The Florida miners are busy generally, and some have booked good-sized orders for 1902 delivery at advancing prices. South Carolina people report a fairly good trade and are quoting as low as 4½d. per unit in foreign markets.

Foreign phosphates are firmer in competing markets. We quote:

Phosphates.	Per ton F. o. b.	C. i. f. Un'd Kingdom or European Ports. Unit.	Long ton.
*Fla. hard rock (77@80%).	$7.00@7.50	6¾@7¼d	$10.53@10.92
*Fla. land peb. (68@73%).	3.00@3.25	5 @6d	7.00@ 8.40
*Fla. Peace Riv. (58@63%).	2.25@2.50	5 @5½d	6.00@ 6.60
†Tenn....(78@80%), export.	3.50	6¾@7d	10.53@10.92
†Tenn.....78% domestic.	3.00@3.25	.....	.....
†Tenn.....75% domestic.	2.75@3.00	.....	.....
†Tenn....70@72% domestic	2.25@2.50	.....	.....
‡So. Car. land rock.....	3.50	4½@5d	5.67@ 6.50
†So. Car. river rock.....	2.75@3.25	.....	.....
Algerian, rock...(63@70%).	.....	6 @6½d	8.04@ 8.70
Algerian, rock..(58@63%).	.....	5¼@5½d	6.30@ 6.60
Tunis, Gafsa...(58@63%).	.....	5¼@5½d	6.30@ 6.60

*Fernandina, Brunswick or Savannah. †Mt. Pleasant. ‡On vessels Ashley River.

Freight rates are firmer.

Liverpool. Nov. 20.

(Special Report of Joseph P. Brunner & Co.)

The position of heavy chemicals is unchanged. Soda ash is moving off freely at the usual varying prices as to market. The nearest spot range for tierces may be called about as follows: Leblanc ash, 48 per cent, £5 15s.@£6; 58 per cent, £6 2s. 6d.@£6 7s. 6d. per ton, net cash. Ammonia ash, 48 per cent, £ 4 10s.@£4 15s.; 58 per cent, £4 15s.@£5 per ton, net cash. Bags, 5s. per ton under price for tierces. Soda crystals are in request and for most quarters £3 7s. 6d. per ton, less 5 per cent is quoted for barrels, or 7 less for bags, with special terms for certain export quarters. Caustic soda is steady, but without much activity. Spot quotations are as follows: 60 per cent, £9@£9 2s. 6d.; 70 per cent, £10@£10 2s. 6d.; 74 per cent, £10 10s.; 76 per cent, £10 15s.@£11 per ton, net cash. Bleaching powder is quiet as regards fresh business, but makers are well employed delivering against contracts, and the price is steady at generally £7 per ton, net cash for hardwood packages, with special terms for certain export markets. Chlorate of potash is firm at 3@3 1-8d. per lb. net cash for any position. Bicarb. soda is without change, and selling at £6 15s. per ton, less 2 1-2 per cent for the finest quality in 1 cwt. kegs, with usual allowances for larger packages; also special terms for a few favored markets. Sulphate of ammonia keeps steady at £11 5s.@£11 7s. 6d. per ton, less 2 1-2 per cent for good gray 24@25 per cent, in double bags f. o. b. here, and there is a fair amount of business passing. Nitrate of soda is selling to a moderate extent on spot at £9 10s.@£9 12s. 6d. per ton, less 2 1-2 per cent for double bags f. o. b. here, as to quality and quantity.

METAL MARKET.

New York. Dec. 6.

GOLD AND SILVER.

Gold and Silver Exports and Imports.
At All United States Ports in October and Year.

Metal	October. 1900.	October. 1901.	Year. 1900.	Year. 1901.
Gold.				
Exports....	$441,962	$3,808,543	$53,046,883	$36,489,019
Imports....	10,731,375	5,493,864	50,720,485	40,893,902
Excess.....	I. $10,289,413	I. $1,685,421	E. $2,326,398	I. $4,404,884
Silver.				
Exports....	$6,103,354	$4,737,689	$53,605,245	$26,225,618
Imports....	3,031,804	3,070,516	33,302,234	25,551,960
Excess.....	E. $3,071,550	E. $1,667,573	E. $20,303,011	E. $363,958

These figures include the exports and imports at all United States ports, and are furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York.

For the week ending Dec. 5, 1901, and for years from January 1st, 1901, 1900, 1899 and 1898.

Period.	Gold. Exports.	Gold. Imports.	Silver. Exports.	Silver. Imports.	Total Excess Exports or Imports.
Week ...	$ 2,442,372	$161,828	$839,745	$74,453	E. $3,045,836
1901.....	44,160,739	4,611,093	29,164,481	2,432,092	E. 66,282,035
1900.....	36,695,393	10,157,546	37,122,203	4,562,661	E. 59,067,352
1899.....	11,732,386	13,794,622	27,665,502	4,454,672	E. 22,052,420
1898.....	8,433,594	96,853,233	32,172,703	3,008,125	I. 59,255,063

Gold exports this week were chiefly to Germany, and imports from the West Indies. Silver exports were mainly to London, and imports from Central and South America and the West Indies.

Financial Notes of the Week

General business shows no marked changes, and the apprehension of dear money seems to have little foundation. Gold exports have been resumed, and some $2,000,000 went out by the steamers of the middle of the week, with possibly more to go on Saturday. This gold goes to France and Germany.

The statement of the United States Treasury on Wednesday, December 4, shows balances in excess of outstanding certificates as below, compared with the corresponding day last week:

	Nov. 27.	Dec. 4.	Changes.
Gold.	$106,064,740	$110,381,735 I.	$4,316,995
Silver.	9,780,429	7,946,278 D.	1,834,151
Legal tenders.	7,024,415	7,381,998 I.	357,583
Treas. Notes, etc.	66,766	73,438 I.	6,672
Totals.	$122,936,350	$125,783,449 I.	$2,847,099

Treasury deposits with national banks amounted to $112,949,260, showing a decrease of $1,313,116 over last week.

The statement of the New York Banks, including the 63 banks represented in the Clearing House—for the week ending November 30—gives the following totals, comparison being made with the corresponding weeks in 1900 and 1899:

	1899.	1900.	1901.
Loans and discounts....	$682,159,800	$804,498,100	$876,169,200
Deposits.	748,078,000	864,410,900	940,668,500
Circulation.	16,480,900	30,670,000	31,975,000
Specie.	145,314,500	166,895,000	176,186,800
Legal tenders.....	50,241,700	60,073,400	72,395,200
Total reserve.....	$195,556,200	$226,968,400	$248,581,700
Legal requirements.....	187,019,500	216,102,725	235,167,125
Balance surplus.....	$8,536,700	$10,865,675	$13,414,575

Changes for the week, this year, were increases of $7,106,200 in loans and discounts, $7,711,000 in deposits, $2,600 in circulation, and $1,844,400 in legal tenders; decreases of $989,000 in specie, and $1,072,350 in surplus reserve.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars and comparison is made with the holdings at the corresponding date last year.

	1900.		1901.	
	Gold.	Silver.	Gold.	Silver.
N. Y. Ass'd.	$166,895,000	.....	$176,186,500	.....
England.	159,260,105	.....	176,851,385	.....
France.	464,969,820	$222,434,500	491,814,180	$220,419,000
Germany.	134,335,000	69,205,000	156,470,000	80,605,000
Spain.	69,370,000	81,800,000	70,040,000	85,125,000
Net'hl'ds	24,390,000	27,755,000	28,711,000	30,139,000
Belgium.	14,375,000	7,185,000	15,573,335	7,786,665
Italy.	77,235,000	8,675,000	79,670,000	10,234,500
Russia.	360,695,000	30,630,000	339,595,000	29,825,000

The returns of the Associated Banks of New York are of date November 30, and the others November 28, as reported by the *Commercial and Financial Chronicle* cable. The New York banks do not report silver separately, but the specie carried is chiefly gold. The Bank of England reports gold only.

Under pressure of sales and lighter inquiry, price of silver was forced down to 24 15-16d. At this price owing to silver coming out less freely, a reaction set in and market closes strong at 25 5-16d.

The United States Assay office, in New York, reports the receipt of 33,000 oz. silver during the week.

Shipments of silver from London to the East for the year up to November 21 are reported by Messrs. Pixley & Abell's circular as follows:

	1900.	1901.		Changes.
India.	£5,752,022	£6,710,410	I.	£958,388
China.	1,233,094	600,212	D.	632,882
The Straits.	577,854	592,412	I.	14,558
Totals.	£7,562,970	£7,903,034	I.	£340,064

Arrivals for the week this year were £173,000 in bar silver from New York, and £5,000 from Australia; total, £178,000. Shipments of bar silver were £60,000 to Bombay, £42,148 to Hong Kong, £10,000 to Calcutta, and £2,500 to Madras; and of Mexican dollars, £33,275 to Hong Kong, £18,400 to Shanghai, and £3,350 to Manila; making total shipments of £169,673.

Indian exchange has been steady at 15.97d. per rupee, with a good demand for Council bills in London. There has been more buying of silver for India than for several weeks past.

Imports of specie by water at San Francisco for October included $2,504,537 gold and $426,083 silver. For the 10 months ending October 31 the imports were as follows:

	Gold.	Silver.	Totals.
Coin.	$10,915,118	$367,692	$11,382,810
Bullion.	3,385,521	2,319,171	5,704,692
Totals.	$14,300,639	$2,686,863	$16,987,502
Totals, 1900.	17,816,505	2,367,762	20,184,367

The imports this year were from the following countries: British Columbia, $108.230; Mexico, $3,208,133; Central America, $83,450; South America, $114,797; Australia, $10,727,548; Japan, $2,683,813; China, $46,219; miscellaneous, $15,312.

OTHER METALS.

Daily Prices of Metals in New York.

Nov.—Dec.	Silver: Sterling Exchange	Silver: N. Y. Cts.	Silver: London Pence.	Copper: Lake Cts. per lb.	Copper: Electrolytic per lb.	Copper: London £ per ton.	Tin, cts. per lb.	Lead cts. per lb.	Spelter: N.Y. cts. per lb.	Spelter: St. L. cts. per lb.
29	4.87½	55¼	25⅛	16¼ @16¼	15⅝ @16¼	57½	26¼	4.32½ @4.37½	4.30 @4.32½	4.15 @4.17½
30	4.87½	55	25⅛	16¼ @16¼	15⅝ @16¼	....	26	4.32½ @4.37½	4.32½	4.17½
2	4.87½	54¼	25⅛	15¾ @16¼	1 5⅝ @16¼	61½	25¾	4.32½ @4.37½	4.32½ @4.35	4.17½
3	4.87¾	54	24⅞	16¼ @16¼	15⅝ @16¼	57¼	25½	4.32½ @4.37½	4.32½ @4.35	4.17½
4	4.87¾	54½	25⅛	16¼ @16¼	15⅝ @16¼	55¼	25¼	4.32½ @4.37½	4.32½ @4.35	4.17½ @4.20
5	4.87½	54⅞	25⅛	16¼ @16¼	15⅝ @16¼	57¾	25¼	4.32½ @4.37½	4.32½ @4.35	4.17½ @4.20

London quotations are per long ton, (2,240 lbs.) standard copper, which is now the equivalent of the former g. m. b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars: the price of electrolytic cathodes, is usually 0.25c lower than these figures.

Copper.—During the week under review the market has been in a state of suppressed excitement. The cables received from abroad on Friday morning showed a sharp break in the foreign market, and rumors began flying thick and fast. Of the many reports circulated the only one that seems to deserve any credence is that a sale of a fair quantity has been made, but the price and the conditions are matters of mere conjecture. The only positive information which we have been able to gather is that American electrolytic copper has been sold in Europe at £72 10s. c. i. f., equal to about 15 5-8 c. f. o. b. New York.

Naturally, business at the moment is practically at a standstill, and, under the circumstances, quotations are more or less nominal at 16 1-4@16 1-2c. for Lake; 15 5-8@16 1-4c. for electrolytic copper in cakes, wirebars and ingots, 15 3-8@16c. in cathodes; 15 1-4@15 3-8c. for casting copper.

The market for standard copper in London broke last Thursday to £63; declined further £5 on Friday, but re-acted on Monday to £61 10s. Renewed selling on Tuesday caused prices to break again, and the closing quotations on Thursday are cabled as £57 15s. @£57 17s. 6d. for spot, £57 10s.@£57 12s. 6d. for three months. It will be noticed that the backwardation has almost entirely disappeared.

Statistics for the second half of November show an increase in the visible supplies of 200 tons.

Refined and manufactured sorts we quote: English tough, £68@£69; best selected, £69@£70; strong sheets, £77@£77 10s., India sheets, £74@£74 10s.; yellow metal, 6@6 1-4d.

Exports of copper from New York and Baltimore during the current week are reported by our special correspondents as follows: To Great Britain, 264 tons; Germany, 290; Holland, 732; France, 379; Austria, 120; Italy, 60; total, 1,845 tons. Also 377 tons matte.

Imports were 365 tons copper, 200 tons matte, and 2,620 tons ore.

Imports of metallic copper into the United States for the 10 months ending October 31 and re-exports of imported copper are given by the Bureau of Statistics of the Treasury Department as below, in pounds:

	1900.	1901.		Changes.
Imports.	60,737,206	62,429,073	I.	1,691,867
Re-exports.	1,281,782	11,231,394	I.	9,949,612
Balance.	59,455,424	51,197,679	D.	8,257,745

Imports of copper and matte for the 10 months were as follows, in tons:

	1900.	1901.		Changes.
Imports.	35,523	77,308	I.	41,785
Re-exports.	964	8,475	I.	7,511
Balance.	34,559	68,833	I.	34,274

The reports do not separate ore and matte, so that it is impossible to approximate the copper contained.

Tin.—The extraordinary conditions prevailing last week have been followed by a sharp reaction. The completion of November option deliveries, the arrival of several overdue steamers, and the unexpected decline abroad, all happening at about the same time, caused a severe break. Inasmuch, however, as consumers are only scantily supplied, a good demand is looked for for the balance of the year. The closing quotations on Thursday are 25 1-4c. for spot, 24 3-4 @25c. for January.

The foreign market opened £2 lower on Thursday, and declined further £3 on Friday, in sympathy with the break in copper. It opened on Monday at £113, and has ruled comparatively steady ever since, the closing quotations on Thursday being cabled as £111 15s.@£111 17s. 6d. for spot, £105 5s. @£105 7s. 6d. for three months.

Statistics for the month of November show an increase in the visible supplies of 2,200 tons.

Imports of tin into the United States for the 10 months ending October 31 were as follows, in long tons.

	1900.	1901.		Changes.
East Indies.	12,675	15,727	I.	3,052
Australia.	195	332	I.	137
Great Britain.	12,306	10,953	D.	1,353
Holland.	1,488	1,044	D.	444
Other countries.	163	142	D.	21
Total.	26,827	28,198	I.	1,371

Of the imports this year 57.5 per cent were made directly from the East and 42.5 per cent, by way of Great Britain and Holland.

Visible supplies of tin on December 1 are reported as below, in long tons:

	Store.	Afloat.	Totals.
London.	5,962	3,508	9,470
Holland.	2,785	408	3,193
U. S., exc. Pacific ports.	2,129	3,972	6,101
Totals.	10,876	7,888	18,764

The total shows an increase of 840 tons as compared with the report for December 1, of last year.

Lead.—Has ruled quiet but steady throughout the week. In the absence of definite information as to what action the American Smelting and Refining Company is going to take in regard to prices for next year, consumers are confining their purchases to their absolute necessities. Outside brands have been rather pressed for sale. The ruling quotations are 4.22 1-2 @4.32 1-2c., St. Louis; 4.32 1-2@4.37 1-2c., New York.

The foreign market has ruled very flat indeed, and the closing quotations are cabled as £10 15s.@£10 17s. 6d. for Spanish lead, £11@£11 2s. 6d. for English lead.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: The price of argentiferous lead is unchanged at 4.32½c. Missouri lead is lower, selling at 4.20@4.25c., according to bonds and delivery.

Imports of lead in all forms into the United States and re-exports of foreign lead refined here in bond are reported by the Bureau of Statistics of the Treasury Department as below, in short tons, for the 10 months ending October 31:

	1900.	1901.	Changes.
Lead, metallic.	204	257	I. 36
Lead, in ores and base bullion.	91,380	94,516	I. 3,136
Total imports.	91,584	94,773	I. 3,189
Re-exports.	82,573	85,478	I. 2,905
Balance	9,011	9,295	I. 284

Of the lead imported this year 66,775 tons, or 70.4 per cent, came from Mexico, and 23,532 tons, or 24.8 per cent, from Canada. In addition to the re-exports given above, there was exported this year 2,364 short tons of domestic lead, against 243 tons in 1900; an increase of 2,121 tons.

Spelter.—Continues quiet but firm. There is nothing of special interest to report. The ruling quotations are 4.17 1-2@4.20c., St. Louis; 4.32 1-2@4.35c., New York.

The foreign market is lower, good ordinaries being quoted at £16 7s. 6d.; specials at £16 12s. 6d.

St. Louis Spelter Market.—The John Wahl Commission Company telegraphs us as follows: Spelter is strong and metal for early delivery scarce. The value is 4.20c., nominal.

Exports of spelter, or metallic zinc, from the United States for the 10 months ending October 31 were 2,799 short tons, against 20,655 tons in the corresponding period of 1900; a decrease of 17,856 tons. Exports of zinc ore were 33,017 tons, against 31,602 tons in 1900, showing an increase of 1,415 tons this year.

Antimony.—Is in fair demand. We quote Cookson's at 10c.; Hallett's at 8 1-4@8 3-8c.; Hungarian, Italian, Japanese, and United States Star at 8@8 1-8c.

Imports of antimony into the United States for the 10 months ending October 31 were as follows, in pounds:

	1900.	1901.		Changes.
Antimony ore.	4,776,535	1,633,496	D.	3,143,039
Regulus and metal.	2,980,092	3,112,366	I.	132,274

The small increase in metal was accompanied by a very large decrease in imports of ore.

Nickel.—The price continues firm at 50@60c. per lb., according to size and terms of order.

Exports of nickel, nickel oxide and matte from the United States for the 10 months ending October 31, were 5,046,218 lbs., against 5,064,706 lbs. for the corresponding period in 1900; a decrease of 18,488 lbs. this year.

Platinum.—Consumption continues good and prices are strong. Ingot platinum in large lots brings $20@$21 per oz., in New York.

Chemical ware (crucibles and dishes), best hammered metal from store in large quantities, is worth 82c. per gram.

Imports of platinum into the United States for the 10 months ending October 31, were 5,405 lbs., against 6,305 lbs. for the corresponding period in 1900; a decrease of 900 lbs. this year.

Quicksilver.—The nominal quotation in New York continues $51 per flask, but the metal can still be had for somewhat less, $49.50 for large orders. In San Francisco the quotations are $47@$48 per flask for domestic trade, and $43@$44 for export. The London quotation is £9 per flask, with the same price quoted from second hands.

Exports of quicksilver from all United States ports for the 10 months ending October 31, were 711,171 lbs., against 671,574 lbs. for the corresponding period in 1900; an increase of 39,597 lbs. this year.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as follows:

	Per lb.		Per lb.
Aluminum.			
No. 1, 99% ingots	33@37c.	Ferro-Tungsten (37%)	28c.
No. 2, 90% ingots	31@34c.	Magnesium	$2.75@$3
Rolled sheets	4c. up	Manganese (over 90%)	$1.00
Alum-brone	20@23c.	Mangan'e Cop. (20% Mn)	32c.
Nickel-alum	33@39c.	Mangan'e Cop (30% Mn)	38c.
Bismuth	$1.50	Molybdenum (Best)	$1.82
Chromium (over 90%)	1.00	Phosphorus	60c.
Copper, red oxide	50c.	American	70c.
Ferro-Molyb'um (50%)	$1.25	Sodium metal	50c.
Ferro-Titanium (10%)	90c.	Tungsten (Best	62c.
Ferro-Titanium (20%)	$1.10		

Variations in prices depend chiefly on the size of the order.

Prices of Foreign Coins.

	Bid.	Asked.
Mexican dollars	$0.43½	$0.46
Peruvian soles and Chilean pesos	.40	.44
Victoria sovereigns	4.85	4.88
Twenty francs	3.84	3.88
Twenty marks	4.73	4.85
Spanish 25 pesetas	4.78	4.82

Average Prices of Metals per lb., New York

Month.	Copper. 1901.	Copper. 1900.	Tin. 1901.	Tin. 1900.	Lead. 1901.	Lead. 1900.	Spelter. 1901.	Spelter. 1900.
Jan.	16.25	15.58	28.51	27.07	4.35	4.68	4.13	4.65
Feb.	16.38	15.78	26.68	30.58	4.35	4.675	4.01	4.64
March	16.42	16.29	26.03	32.90	4.35	4.675	3.91	4.60
April	16.43	16.76	25.93	30.90	4.35	4.675	3.98	4.71
May	16.41	16.34	27.12	29.37	4.35	4.181	4.04	4.83
June	16.38	15.75	28.60	30.50	4.35	3.901	3.99	4.29
July	16.31	15.97	27.85	33.10	4.35	4.030	3.95	4.28
August	16.25	16.35	26.78	31.28	4.35	4.250	3.99	4.17
Sept.	16.25	16.44	25.31	29.42	4.35	4.350	4.08	4.11
October	16.25	16.37	26.62	28.54	4.35	4.350	4.23	4.15
November	16.23	16.40	26.67	28.25	4.35	4.350	4.29	4.29
Dec.	....	16.31	....	28.94	...	4.350	...	4.25
Year	....	16.19	....	29.90	...	4.37	...	4.39

The prices given in the table for copper are the averages for electrolytic copper. The average price for Lake copper for the year 1900 was 16.52c.; for the month of January, 1901, it was 16.77c.; for February, 16.90c; for March, 16.94c.; for April, 16.94c.; for May, 16.94c.; for June, 16.90c.; for July, 16.61c.; for August, 16.50c.; for September, 16.54c; for October, 16.60c.; for November, 16.64c.

Average Prices of Silver, per oz., Troy.

Month.	1901. London. Pence.	1901. N. Y. Cents.	1900. London Pence.	1900. N. Y. Cents.	1899. London. Pence.	1899. N. Y. Cents.
January	28.97	62.82	27.30	59.30	27.42	59.36
February	28.13	61.06	27.49	59.76	27.44	59.42
March	27.04	60.63	27.59	59.81	27.48	59.64
April	27.30	59.29	27.41	59.59	27.63	60.10
May	27.43	59.64	27.56	59.96	28.15	61.23
June	27.42	59.57	27.81	60.42	27.77	60.43
July	26.96	58.46	28.23	61.25	27.71	60.26
August	26.94	58.37	28.13	61.14	27.62	60.00
September	26.95	58.26	28.85	62.63	27.15	58.89
October	26.62	57.59	29.58	63.83	26.70	57.98
November	26.12	56.68	29.66	64.04	27.02	58.67
December	....	....	29.68	64.14	27.21	58.99
Year	....	....	28.27	61.33	27.44	59.58

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

UNITED STATES.

Articles. Long tons.	October. Imports.	October. Exports.	Ten months. Imports.	Ten months. Exports. Foreign.	Ten months. Exports. Domestic.
Ores and Metals.					
Antimony	35	.....	1,389	.....	.....
Antimony ore	6	.....	728	22	.....
Copper	2,768	7,324	27,871	5,013	72,646
Copper ore, matte	11,262	3,152	77,308	8,475	13,138
Iron and Steel:					
Bars, rods	4,377	3,183	31,404	64	45,123
Billets, blooms	850	94	6,602	3	27,196
Hoops, bands	1,153	18	2,841	.....	1,032
Pig iron	5,371	8,808	39,336	145	57,754
Nails and spikes	.....	1,685	.....	.....	26,470
Rails	195	18,746	1,085	.....	286,281
Scrap	1,452	1,880	16,454	3,331	12,552
Sheets, plates	725	1,120	4,318	90	28,100
Wire	973	8,852	3,357	27	70,377
Miscellaneous	34	3,335	355	13	44,267
Iron ore	82,871	11,133	807,547	.....	60,534
Lead	101	1	230	22	2,110
Lead ore, bullion	7,592	6,794	84,389	76,297	.....
Manganese ore, oxide	10,160	.....	121,991	106	.....
Nickel ore, matte	20	265	27,971	.....	2,252
Quicksilver	.....	54	.....	.....	318
Tin	2,793	66	28,198	894	.....
Tin & black plates	9,277	27	59,921	141	427
Zinc	.....	96	329	.....	2,498
Zinc ore	.....	3,731	.....	.....	33,017
Minerals.					
Asphalt	5,527	108	115,378	213	.....
Brimstone	9,590	5	129,071	156	.....
Cement	23,287	9,270	132,549	5,910	67,610
Coal, anthracite	.....	161,269	.....	7	1,768,684
Coal, bituminous	112,365	508,312	1,568,439	2,086	4,634,324
Coke	.....	28,261	.....	.....	322,636
Copper sulphate	.....	96	.....	.....	21,115
Graphite	1,142	.....	12,355	3	.....
Nitrate of soda	16,729	143	169,247	1,799	.....
Phosphate rock	21,668	71,967	139,923	30	648,450
Pyrites	28,534	.....	331,820	.....	.....
Salt	14,455	389	149,379	1,469	7,813

The figures for copper are those given by the Treasury Department. The statement made by Mr. John Stanton for the Associated Copper Companies will be found monthly in our metal market. These figures give the exports for October as 6,016; ten months, 74,126 tons.

Import Duties.

Metals.—The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, ¾c. a lb. Lead 1½c. a lb. on lead ores; 2½c. a lb. on pigs, bars, etc., 2½c. on sheet pipe and manufactured forms. Nickels, 6c. a lb. Quicksilver, 7c. a lb. Spelter or zinc, 1½c. a lb. on pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

Minerals.—Duties are: Asphalt, crude, $1.50 per ton, and refined $3 per ton. Coal, bituminous, 67c. long ton; coke, 20c. ad. val. Cement, Roman Portland and hydraulic, in bulk, 8c. per 100 lbs. and in packages 7c. Copper sulphate, ½c. a lb. Salt in bulk, 8c. per 100 lbs., and in bags, etc., 12c. Brimstone, anthracite coal, graphite, phosphate rock, pyrites and nitrate of soda are free of duty.

DIVIDENDS.

Name of Company	Latest Dividend—Per Date.	Per Share.	Total.	Total to date
*Bald Butte, Mont.	Dec. 10	.06	$15,000	$1,102,148
†Boston & Montana Copper.	Dec. 20	5.00	750,000	26,225,000
*Central Lead, Mo.	Dec. 15	.50	5,000	267,000
*Daly West, Utah.	Dec. 16	.40	60,000	1,207,500
*Empire State, Idaho.	Dec. 16	.10	50,554	1,258,338
*Esperanza (El Oro), Mex.	Dec. 4	4.40	13,200	920,580
*La Fortuna, Ariz.	Dec. 9	.05	12,500	1,066,000
†Last Dollar, Colo.	Dec. 10	.02	30,000	150,000
†National Lead pf.	Dec. 16	1.75	260,820	11,883,560
North Star, B. C.	Dec. 15	.01½	19,500	253,500
Ontario Silver, Utah.	Dec. 20	.30	45,000	14,735,500
Osceola, Mich.	Dec. 23	3.00	287,700	4,245,800
Sta. Marie de Guad., Mex.	Dec. 10	4.53	11,325	292,600
*Silver King, Utah.	Dec. 10	.66⅔	100,000	4,625,000
*Smuggler, Colo.	Dec. 16	.03	30,000	2,155,000
*Standard Oil	Dec. 16	8.00	7,660,000	119,585,000
†St. Joseph Lead, Mo.	Dec. 20	.15	37,500	3,459,500
‡Tamarack Copper	Dec. 30	10.00	600,000	8,490,000
†U. S. Steel com.	Dec. 20	1.00	5,082,347	10,143,462
Utah Con. Copper	Dec. 10	1.22	366,000	732,000

*Monthly. †Quarterly. ‡Semi-annual.

ASSESSMENTS.

Name of Company.	Location.	No.	Delinq.	Sale.	Amt.
Alta	Nev.	..	Nov. 22	Dec. 20	.05
Am. Oil & Ref.	Cal.	..	Nov. 25	Dec. 23	.05
Belcher.	Nev.	..	Dec. 8	Dec. 31	.10
Black Hawk	Utah.	..	Nov. 18	Dec. 9	.001¼
Canton Placer	Cal.	2	Jan. 6	.....	.02
Cal. Dredging	Cal.	3	Nov. 25	Dec. 16	10.00
Goleta Con.	Cal.	3	Nov. 29	Dec. 28	.10
Mexican	Nev.	69	Dec. 17	Jan. 7	.10
Mohican.	Cal.	..	Jan. 4	.....	.05
Orient	Cal.	..	Dec. 12	.....	.35
Orleans Con.	Cal.	11	Dec. 28	.....	.02
Overman	Nev.	9	Dec. 24	Jan. 15	.05
Ridge & Valley	Utah.	3	Dec. 10	Dec. 30	.02½
Reward	Cal.	..	Dec. 20	.....	.02
Sharp.	Utah.	4	Nov. 19	Dec. 16	.03
Shower Con.	Utah.	5	Nov. 30	Dec. 23	.02
Sierra Nevada	Nev.	..	Dec. 17	.....	.10
Tetro.	Utah.	21	Dec. 7	Dec. 31	.01
Thorpe.	Cal.	11	Nov. 16	Dec. 9	.01
Utah Con.	Nev.	..	Nov. 30	Dec. 24	.05

STOCK QUOTATIONS.

NEW YORK.

Company and Location.	par val	Nov. 28.* H.	Nov. 28.* L.	Nov. 29. H.	Nov. 29. L.	Nov. 30. H.	Nov. 30. L.	Dec. 2. H.	Dec. 2. L.	Dec. 3. H.	Dec. 3. L.	Dec. 4. H.	Dec. 4. L.	Sales
Alamo, Colo.	$1	.....	.....	.....	.....	13½	.....	.14	.....	.13	.....	.11	.....	3,000
Amalgamated c., Mont	100	.....	.....	79.50	75.00	76.00	72.50	76.38	72.75	74.75	71.50	74.50	71.63	613495
Anaconda c., Mont.	25	.....	.....	32.75	30.50	31.00	30.30	31.63	30.50	31.50	30.63	32.00	30.75	26,620
Anaconda Gold, Colo.	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Argentum Jun., Colo.	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Best & Belcher, Nev.	3	.....	.....	.....	.....	.....	.....	.13	.....	.15	.....	.13	.....	2,000
Breece, Colo.	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brunswick, Cal.	1	.....	.....	.14	.....	.....	.....	.14	.....	.....	.....	.....	.....	300
Comstock T., Nev.	100	.....	.....	.....	.....	.....	.....	.06	.....	.07	.....	.....	.....	1,200
Comstock Bonds, Nev.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. Cal. & Va., Nev.	2½	.....	.....	.....	.....	1.75	.....	1.65	.....	1.75	1.65	1.70	.....	810
Crescent, Colo	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
CrippleCr. Con., Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.08	.....	1,000
Elkton, Colo.	1	.....	.....	1.50	.....	.....	.....	.....	.....	1.45	.....	.....	.....	300
Gold Dollar, Colo.	1	.....	.....	.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000
Golden Fleece, Colo.	1	.....	.....	.30	.....	.....	.....	.....	.....	.....	.....	.....	.....	500
Gould & Curry, Nev.	3	.....	.....	.....	.....	.07	.....	.....	.....	.....	.....	.....	.....	300
Hale & Norcross, Nev.	3	.....	.....	.....	.....	.....	.....	.....	.....	.20	.....	.....	.....	200
Horn Silver, Utah.	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Isabella, Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.36	.35	.....	.....	300
Justice, Nev.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Little Chief, Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.13	.....	300
Mexican, Nev.	3	.....	.....	.18	.....	.....	.....	.16	.....	.....	.....	.....	.....	800
Mollie Gibson, Colo.	5	.....	.....	.21	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Ontario, Utah	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ophir, Nev.	3	.....	.....	.....	.....	.....	.....	.76	.....	.....	.....	.....	.....	300
Phoenix, Ariz.	1	.....	.....	.07½	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Portland, Colo.	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Potosi, Nev.	3	.....	.....	.....	.....	.05	.....	.35	.....	.....	.....	.04	.....	1,000
Quicksilver, Cal.	100	.....	.....	4.50	.....	.....	.....	4.25	.....	4.00	.....	.....	.....	500
Quicksilver pf., Colo.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra, Nev.	3	.....	.....	.....	.....	.....	.....	.08	.....	.11	.....	.....	.....	600
Standard Con., Cal.	10	.....	.....	4.00	.....	4.00	.....	.....	.....	4.00	.....	4.00	.....	500
Union Con., Nev	1	.....	.....	.....	.....	.....	.....	.....	.....	.10	.....	.12	.....	700
Union Copper, N. C.	10	.....	.....	.04⅞	.04⅜	.04⅝	.04½	.04⅝	.04½	.04¼	.04½	.....	.....	.....
Work, Colo.	1	.....	.....	.....	.....	.10	.....	.10	.....	.....	.....	.09	.....	2,500

Coal and Industrial Stocks.

Am. Agr. Chem., U.S.	100	.....	.....	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	500
Am. Agr. Chem. pf, U.S.	100	.....	.....	82	.....	.....	.....	.....	.....	81½	81	81	.....	160
Am. Car & Fdy., U.S.	100	.....	.....	29⅝	29⅝	29¼	29	29	28¾	29½	28½	28⅝	29	6,953
Am. Car & Fdy. pf, U.S.	100	.....	.....	85	.....	85½	85	85¼	85	85½	84¾	85⅝	85¼	3,037
Am. Sm. & Ref., U.S.	100	.....	.....	45½	45¼	45	43	44¾	42¾	44½	42½	44¼	43½	6,740
Am. Sm. & Ref. pf, U.S.	100	.....	.....	99⅛	97¾	97	96¾	97	95¾	97⅜	96¼	.....	.....	2,110
Col. Fuel & I., Colo.	100	.....	.....	93¾	93	93	.....	92¼	.....	92	91½	92¼	.....	1,100
Col. & H. C. & I., Colo.	100	.....	.....	19¾	19¼	19¼	18⅜	18⅜	18	18	17⅝	18¾	18¼	3,540
Int'l S. Pump, U.S.	100	.....	.....	49	48¼	48¼	.....	49¼	48¼	49¼	48¾	48⅞	.....	1,400
Int'l S. Pump pf, U.S.	100	.....	.....	.....	.....	.....	.....	86¾	.....	87½	86	.....	.....	100
Mong. R. Coal, Pa.	100	.....	.....	13½	13¾	13¼	13½	12⅜	.....	.....	.....	.....	.....	.....
Mong. R. Coal pf, Pa.	100	.....	.....	46¼	.....	46¼	.....	47	46¼	.....	.....	.....	.....	.....
National Lead, U.S.	100	.....	.....	19	18¾	18¾	.....	.....	.....	19	18¼	18½	.....	1,350
National Lead pf, U.S.	100	.....	.....	.....	.....	.....	.....	.....	.....	86¼	85	86¾	.....	100
National Salt, U.S.	100	.....	.....	31	30½	31	30¾	31	.....	31	27	31	.....	100
National Salt pf, U.S.	100	.....	.....	68	62	69	62	67	62	66	62	67½	62	.....
Pittsburg Coal, Pa.	100	.....	.....	28	27¾	27⅞	27⅝	27¼	27⅜	.....	.....	.....	.....	1,700
Pittsburg Coal pf, Pa.	100	.....	.....	91¼	91½	91¼	91	91	90¾	.....	.....	.....	.....	710
*Pressed Steel Car, Pa.	100	.....	.....	.....	.....	.....	.....	42½	.....	42¾	42½	42¾	42½	1,320
Republic I & S., U.S.	100	.....	.....	16⅜	16	16	.....	16¾	15⅞	16	15⅝	16	.....	2,700
Republic I. & S., pf, U.S.	100	.....	.....	70	69⅝	69⅝	69⅝	69¼	.....	69¼	69	69⅝	69½	2,900
Sloss-Shef S. & I., Ala.	100	.....	.....	31¼	31	31	30½	31½	30⅝	30½	.....	30¾	30¼	100
Sloss-Shef S. & I. pf, Ala.	100	.....	.....	83	81	82	81	83	80	83	80	83	80	.....
Standard Oil, U.S.	100	.....	.....	697	695	700	695	700	695	696	695	698	696	.....
Tenn. C. I. & R. R., Ala.	100	.....	.....	66¾	64¾	65¼	64	65	63¼	64	63¼	64¼	64¼	16,145
U.S. Steel Corp., U.S.	100	.....	.....	43¾	42¾	43⅞	43	43⅝	42⅝	43⅜	42⅝	43¼	42⅞	165807
U.S. Steel Corp. pf, U.S.	100	.....	.....	94	92¾	94	93¾	94	92¼	93¾	92½	93⅝	93	181077
Va.-Car Chem., U.S.	100	.....	.....	.....	.....	.....	.....	61	.....	62½	62	62¼	.....	400
Va.-Car Chem. pf, U.S.	100	.....	.....	.....	.....	.....	.....	.....	.....	125	122	.....	.....	.....

Total sales 1,056,382 shares. * Holiday.

BOSTON, MASS.

Name of Company.	par val	Shares listed.	*Nov. 28. H.	*Nov. 28. L.	Nov. 29. H.	Nov. 29. L.	Nov. 30. H.	Nov. 30. L.	Dec. 2. H.	Dec. 2. L.	Dec. 3. H.	Dec. 3. L.	Dec. 4. H.	Dec. 4. L.	Sales.
Adventure Con. c.	$25	100,000	.....	.....	22.00	21.50	21.00	.....	21.50	20.50	21.00	20.00	20.25	20.00	800
Aetna Con., q.	5	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Allouez, c.	25	80,000	.....	.....	5.00	4.50	4.50	.....	4.50	.....	.....	.....	4.50	4.00	601
Amalgamated, c.	100	1,550,000	.....	.....	79.75	75.25	76.25	72.50	76.00	72.75	74.75	71.63	74.25	71.50	76,569
Am. Gold Dreg.	5	90,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Am. Z. L. & Sm.	25	60,000	.....	.....	10.00	.....	9.50	.....	9.50	.....	10.00	9.50	.....	.....	210
Anaconda, c.	25	1,200,000	.....	.....	32.38	32.00	.....	.....	.....	.....	31.00	30.50	31.25	.....	320
Arcadian, c.	25	150,000	.....	.....	5.50	.....	.....	.....	5.50	5.25	5.50	5.00	5.25	5.00	1,400
Arnold, c.	25	60,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Atlantic, c.	25	40,000	.....	.....	39.50	38.50	39.50	38.50	40.00	38.25	40.50	39.00	38.50	.....	930
Baltic	25	100,000	.....	.....	48.00	46.50	47.00	45.00	45.50	44.00	45.00	44.50	45.00	42.50	4,228
Bingham, Cons.	50	150,000	.....	.....	28.50	28.00	28.50	.....	28.50	28.00	28.00	.....	28.00	.....	1,532
Bonanza Dev.	10	300,000	.....	.....	1.00	.....	1.00	.....	.....	.....	1.00	.....	1.00	.....	1,250
Boston, q.	10	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Breece	25	200,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British Columbia	5	200,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cal. & Hecla, c.	25	100,000	.....	.....	645.	615.	635.	622.	625.	620.	625.	612.	630.	625.	177
Catalpa	10	300,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Centennial, c.	25	90,000	.....	.....	16.75	16.50	16.13	16.00	16.50	16.25	16.00	15.50	16.00	15.25	106
Central Oil	25	60,050	.....	.....	.....	.....	8.00	.....	.....	.....	.....	.....	.....	.....	100
Cochiti, g.	10	193,750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Cons. Mercur, g.	5	1,000,000	.....	.....	1.63	1.50	1.50	1.50	1.63	.....	1.50	1.38	.....	.....	13,912
Con. Zinc & L. M. S.	10	110,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Copper Range, c.	25	100,000	.....	.....	69.00	67.00	67.00	65.50	66.00	65.00	66.00	65.00	64.00	.....	3,650
Daly-West	20	150,000	.....	.....	31.00	30.00	.....	.....	.....	.....	30.25	.....	.....	.....	535
Dominion Coal	100	150,000	.....	.....	47.25	47.00	.....	.....	47.25	47.00	47.00	46.75	46.88	.....	870
Dominion Coal, pf.	100	30,000	.....	.....	.....	.....	.....	.....	119.	.....	.....	.....	.....	.....	100
Elm River, c.	12	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Franklin, c.	25	100,000	.....	.....	16.00	.....	16.50	16.00	16.00	.....	15.50	.....	15.00	14.50	600
Guanajuato Cons.	5	385,000	.....	.....	6.00	5.25	5.25	.....	5.50	4.88	5.00	.....	5.00	.....	3,329
Humboldt, c.	25	40,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
I. Royale Con., c.	25	150,000	.....	.....	23.88	22.50	22.25	21.50	22.50	22.00	22.50	22.00	22.00	.....	4,010
Mass. Con., c.	25	100,000	.....	.....	24.00	22.25	23.00	22.00	†2500	24.00	23.00	22.00	22.50	22.00	2,805
Mayflower, c.	25	100,000	.....	.....	3.50	3.25	.....	.....	.....	.....	.....	.....	3.50	.....	350
Michigan, c.	25	100,000	.....	.....	14.00	13.50	14.00	13.25	13.00	12.75	12.50	.....	12.50	12.25	1,720
Mohawk, c.	25	100,000	.....	.....	42.50	41.00	.....	.....	40.50	40.00	40.00	.....	39.25	38.13	3,005
Mont. C. & C.	25	200,000	.....	.....	.....	.....	.....	.....	4.00	.....	.....	.....	4.38	4.00	350
National	25	100,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. E. Gas & Coke.	100	100,000	.....	.....	6.50	6.00	6.50	6.00	6.38	6.13	6.00	.....	5.06	.....	1,645
Old Colony, c.	25	100,000	.....	.....	4.75	4.00	.....	.....	4.38	.....	.....	.....	4.00	.....	240
Old Dominion, c.	25	150,000	.....	.....	25.50	25.25	25.25	25.00	25.50	25.13	.....	.....	25.75	25.13	1,125
Osceola, c.	25	93,000	.....	.....	95.00	93.00	93.00	91.00	93.00	89.50	90.50	89.00	89.00	88.00	2,547
Parrot, s. c.	10	229,850	.....	.....	35.75	35.25	35.25	34.00	34.50	34.00	35.00	33.00	35.00	33.00	1,283
Phoenix Con., c.	25	100,000	.....	.....	5.75	.....	.....	.....	5.88	5.50	6.00	5.75	.....	.....	1,000
Quincy, c.	25	100,000	.....	.....	155.	.....	152.	.....	150.	.....	150.	.....	150.	.....	251
Rhode Island, c.	25	100,000	.....	.....	3.50	.....	.....	.....	3.50	.....	3.50	.....	3.50	.....	300
Santa Fe, g. c.	10	250,000	.....	.....	4.00	.....	4.00	.....	4.00	.....	4.00	3.75	4.00	3.75	900
San Ysabel, g.	5	130,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Shawmut Oil	25	50,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50
Tamarack, c.	25	60,000	.....	.....	280.	275.	275.	271.	275.	.....	270.	260.	260.	.....	60
Tecumseh, c.	25	80,000	.....	.....	.....	.....	1.50	.....	1.75	.....	.....	.....	.....	.....	227
Trimountain, c.	25	100,000	.....	.....	46.00	45.00	.....	.....	43.00	42.00	42.00	41.00	41.00	.....	1,540
Trinity, c.	25	160,000	.....	.....	25.50	.....	25.00	24.50	25.25	25.00	25.25	25.00	25.00	.....	.....
Union, C. L.	25	80,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
United States, g.	25	250,000	.....	.....	15.75	15.25	15.00	.....	15.00	.....	15.00	14.63	15.25	14.25	3,611
U. S. Oil.	25	100,000	.....	.....	14.00	13.25	13.50	13.25	13.38	.....	13.00	12.75	12.88	12.50	2,530
Utah Con., g.	5	300,000	.....	.....	23.00	22.00	22.00	.....	23.00	22.00	23.00	22.00	22.50	.....	2,041
Victoria, g.	25	100,000	.....	.....	6.88	6.50	6.50	.....	6.50	6.00	6.25	5.75	6.25	6.00	1,105
Washington, c.	25	60,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Winona, c.	25	100,000	.....	.....	2.25	.....	.....	.....	2.25	2.13	2.25	.....	.....	.....	225
Wolverine, c.	25	60,000	.....	.....	58.50	57.25	58.00	.....	58.50	57.63	57.50	57.00	57.00	.....	1,002
Wyandot, c.	25	100,000	.....	.....	1.25	.....	.....	.....	.....	.....	1.25	.....

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.

Name of Company.	par val	Nov. 23. H.	Nov. 23. L.	Nov. 25. H.	Nov. 25. L.	Nov. 26. H.	Nov. 26. L.	Nov. 27. H.	Nov. 27. L.	*Nov. 28. H.	*Nov. 28. L.	Nov. 29. H.	Nov. 29. L.	Sales
Acacia	$1	.13⅜	.13	.14¼	.13½			.13⅝	.13½			.13¼	.13	7,000
Alamo	1	.14	.13	.14	.12⅞			.14	.12⅞			.13½	.12⅞	3,000
Am. Con	1													
Anaconda	1	.27½	.25¼	.28	.25½			.28	.25			.25		
Anchor	1	.02		.02	.01⅜			.02				.02	.01⅜	
Antelope	1							.02						
Aola	1	.03¼	.03⅜	.03⅞	.03½			.03¾	.03⅝			.03¾	.03½	10,000
Argentum Jr	1	.05		.07	.05½			.06½	.05½			.06	.05½	6,000
Banner	1			.01¼				.01⅛				.01¼		
Battle Mt. C	1	.18	.17	.18	.16			.18	.17			.17	.16¼	1,500
Black Bell	1	.09	.08	.09				.08¾				.09¼		
Blue Bell	1											.09⅞		
Buckhorn	1	.03⅜	.01½					.02½	.02			.02⅝		
But'fly Ter	1	.20		.22	.20			.25	.20			.22	.20	9,700
Cadillac	1	.01½		.01⅛				.01¾				.01¾		
Cent'l Con	1	.08	.07¾	.07⅝	.07½			.08	.07¾			.08½	.07⅜	4,000
Champion	1	.05⅞		.03⅞	.03½			.03¾	.03½			.03¾	.03½	1,000
Chicolo	1	.01⅛		.01⅝	.01⅛			.01⅛						
C. K. & N	1	.02¼	.02½	.02¼	.02⅛			.02¼	.02⅛			.02¼	.02	10,000
C. C. Colum	1													
C. C. G. Ext	1			.07½				.07				.08¼		11,000
C. C. & Mn	1	.05½	.05	.05½	.05			.05¾	.05			.05½	.05	1,000
Cr'de & C. C	1	.04⅜	.04⅝	.05½	.04¾			.05	.04¾			.04¾		
C. C. Con	1	.09¼	.09	.09½	.08½			.08½	.08			.08¾	.07¼	
Dante	1	.04⅜	.04½	.04⅜	.04¼			.04⅜	.04			.04⅜	.04¼	3,000
Dr. Jack Pot	1	.53¼	.53	.54¼	.54			.54	.53			.56	.54½	7,500
Eclipse	1													
Elkton, Con	1	1.49	1.48½	1.50½	1.55½			1.55	1.54⅜			1.55	1.54¼	31,439
El Paso, G	1	.74⅜	.73⅝	.72¾	.72¼			.71¾	.71½			.69½	.69	24,204
Fanny Rawlings	1	.18	.15	.17½	.15			.15½	.14½					4,000
Findley	1	.08½	.07½	.08½	.07½			.08				.08		
Gold Dollar	1	.12⅜	.12½	.12¼	.12⅜			.12½	.12			.12⅛	.12	34,000
Gold Cycle	1	.62	.60	.62	.01¼			.62	.60 ½			.62	.60	3,000
Gold Fleece	1	.39		.20				.20				.20		
Hayden, G	1													
Ingham, Con	⅛	.13¼	.12⅝	.13				.13½	.12⅝			.13⅜	.13¼	
Ironclad	1	.04	.03	.03½	.03			.03⅝	.02⅞			.03	.02¾	
Isabella	1	.37¼	.37	.36	.35			.37¾	.37½			.37	.35	31,950
Jack Pot	1	.39		.39				.40	.39			.39	.38½	1,000
Josephine	1													
Key West	1	.01½		.01½				.01¾	.01½			.01½		
Lexington	1	.07¼	.07	.07	.06¾			.07¼	.06⅞			.06¾	.06⅝	5,000
Magnet, R	1	.01⅞	.01½	.01⅞	.01½							.02	.01½	
Margaret	1													
Mangery	1	.02	.01½	.02				.02	.01					
Midway	1	.03⅞	.03⅜	.03⅞	.03⅜			.03¾	.03⅜			.03¾	.03⅜	
M. J. T	1	.01⅝		.01⅞								.01⅞	.01⅝	1,000
Mobile	1	.02¼	.01½	.02	.01⅞			.02⅛	.01⅝			.02	.01⅛	
Moll Dwyer	1	.04¾	.04¼	.04½	.04⅜			.04½	.04⅜			.04⅜	.04¼	4,000
Mol. Gibson	1	.18½	.16	.17¼	.16			.18	.15			.16½	.15½	2,500
Monarch	1	.03½		.03⅜				.03½	.02½			.03¼	.02½	
Montreal	1	.03¼		.03	.02			.03	.02			.03		
Moon A'c'r	1	.28	.24	.27	.24			.26				.25		
Morn'g Star	1	.03⅞	.03⅜	.03⅞	.03⅜			.03⅝	.03¼			.03⅝	.03½	1,000
National	1	.02¼	.02½	.02½	.02			.02½	.02			.02¼	.02	6,000
Nellie, V	1	.04⅜	.04⅜	.04⅞	.04½			.04⅝	.04½			.04⅝	.04½	10,000
New Haven	1	.04⅜	.04⅜	.05	.04½			.05	.04¼			.04½	.04	4,000
Olive Branch	1	.02⅞	.02¼	.02⅞	.02⅜			.02⅞	.02½			.02⅞	.02⅜	
Oriole	1	.01½	.01¼	.02	.01			.02	.01			.02	.01	
Orphan	1													
Pelican	1	.01												1,000
Pharmacist	1	.06¼	.06	.06½	.05½			.06	.05⅞			.05½	.05¼	1,000
Pilgrim	1	.04		.03⅝	.03			.03½				.03½		2,000
Pinnacle	1	.08¼	.08	.08½	.08			.09	.08			.08½	.08	
Pointer	1	.06	.05⅞	.05¾	.05½			.05⅜	.05			.05	.04⅜	23,000
Portland	1	2.84		2.90	2.87½			3.00	2.89			2.91	2.89	5,100
Prince Alb	1	.03½	.03¼	.03½	.03⅜			.03⅝	.03			.03½	.03⅜	9,000
Princess	1	.02¼	.02	.02⅜	.02⅛			.02				.02⅜	.02⅛	3,000
Progress	1	.04	.03½	.03¾	.03½			.04	.03½			.04	.03⅜	
Republic	1	.04	.03¾	.04	.03¼			.04¼	.03¼			.04	.03¾	
Bob. Burns	1	.03	.02⅛	.03	.02			.02¼				.02½	.02	2,000
Rose Maud	1	.06⅛		.06⅜	.06¼			.06¼	.06			.06	.05¾	9,000
Rose Nichl	1	.05¼		.05½	.05¼			.05¾				.05¾	.05	1,000
Silver Gold	1													
Uncle Sam	1	.02⅛		.02¼	.01⅛			.02¼						
Vindicator	1	1.24	1.20	1.24	1.16			1.24	1.17			1.22	1.10	1,000
Va. M	1	.03						.03				.03		
Work	1	.09½	.09	.09¾	.09¼			.10½	.09½			.09½	.09	4,000

Total sales 298,893 shares. *Holiday.

Colorado Springs (*By Telegraph.*)

Name of Company.	par val	* Nov. 28. H.	* Nov. 28. L.	Nov. 29. H.	Nov. 29. L.	Nov. 30. H.	Nov. 30. L.	Dec. 2. H.	Dec. 2. L.	Dec. 3. H.	Dec. 3. L.	Dec. 4. H.	Dec. 4. L.
Acacia	$1			.13¼	.13	.12⅞	.12⅜	.12⅜	.12	.12½	.11¾	.11½	.10⅞
Alamo	1			.13⅜	.12⅞	.13⅜	.12⅞	.14	.12⅞	.14	.12⅜	.13⅜	.12⅞
Anaconda	1			.26	.25	.26	.25	.28	.25	.26½	.25	.26⅜	.25
Argentum	1			.06	.05½	.06	.05½	.05⅞	.05	.05¾	.05	.05	.04¾
Battle Mt	1			.17	.16¾	.17¾	.17	.19	.17	.17¾	.16¾	.18	.17
Butterfly Ter	1			.22	.20	.23	.21½	.25	.22	.25	.20½	.23¾	.20
Cripple Creek Con	1			.08¾	.08¼	.08⅜	.08¼	.08¼	.08	.08	.07¾	.08¼	.07¾
Dr. Jack Pot	1			.56	.54½	.55	.54¼			.52½	.52	.55	.54
El Paso	1			.69½	.69	.65½	.65			.65¾	.65½	.67	.66½
Elkton, Con	1			1.55	1.54¼	1.52½	1.50			1.52	1.50¼	1.49½	1.49
Fanny Rawlings	1			.15½	.14	.15½	.10	.15	.10	.15	.11	.15	.11
Finley	1			.08⅜	.08	.08½	.08	.08¼	.08¾	.08¾	.08¾	.09	.08½
Gold Dollar	1			.12⅛	.12	.12	.11¾	.11⅛	.10⅞	.11⅛	.10¾	.10⅞	.10¾
Gold King	1			.90	.50			.85	.50	.90	.50	.90	.50
Golden Cycle	1			.62	.60½	.62	.60½	.62	.61	.62	.61½	.63	.61½
Golden Fleece	1			.35	.20	.35	.20	.35	.20	.35	.20	.35	.20
Hart	1			.06	.05	.07	.05	.06	.04	.07	.04	.06	.04
Ingham, Con	1			.13⅜	.13¼	.13⅛	.13	.13⅜	.13⅛	.13½	.12¾	.13½	.13
Isabella	1			.37	.35	.35¾	.35	.35¼	.34¾	.34½	.33⅞	.33½	.33
Jack Pot	1			.39	.38½	.40	.38½	.40½	.39	.40½	.38½	.41	.39
Keystone	1			.08	.06½	.08	.06½	.08	.06¾	.06	.05⅞	.07⅛	.06
Last Dollar	1			.60	.50	.62	.52	.60	.52	.60	.53	.60	.55
Lexington	1			.06¾	.06½	.06¾	.06¾	.06⅞	.06¾	.06¾	.06	.06¾	.05¾
Mobile Gibson	1			.16½	.15½	.15½	.13½	.15½	.13	.15½	.13	.15	.13
Moon Anchor	1			.25	.24	.25	.24	.25	.20½	.25	.20½	.27½	.21
Nuggett	1			.16½	.16	.16½	.16	.16	.15	.16	.15	.16	.15
Orphan	1												
Pharmacist	1			.05½	.05¼	.05½	.05	.05⅜	.05	.05¼	.05	.05¾	.05
Pinnacle	1			.08¼	.08	.09	.08	.08¼	.08¼	.09	.08¼	.08½	.08
Portland	1			2.91	2.89	2.92	2.88	2.90	2.88	2.89	2.86	2.90	2.85
Vindicator Con	1			1.22	1.10	1.20	1.10	1.22½	1.16	1.21	1.17	1.24	1.19
Work	1			.09½	.09	.09½	.08½	.08¾	.08½	.08¾	.08½	.08¾	.08⅝

* Holiday.

MONTREAL, CANADA. Nov. 24.

Name of Company.	par val	H.	L.	Sales	Nome of Company.	par val	H.	L.	Sales
Big Three	$1	.01¼			Montreal-London	$0.24	.02¼	.01½	
California	1	.04½	.04		Noble Five	1			
Can. Gold Fields	0.10	.04¾			Novelty	1	.01¼	.00½	
Deer Trail Con	1	.03½	.02¼		North Star		.27	.22	
Evening Star	1	.04	.02		Payne	1	.14	.12½	1,500
Golden Star	1	.04¼	.03		Rambler-Cariboo	1			
Gold Hills Dev	1	.01½			Republic Con	1	.04¼	.02½	
Knob Hill	1				Slocan-Sovereign	1	.03	.02	
Monte Christo	1	.02			Virtue	1	.23½	.22½	1,000
Montreal, G. F	1	.02½			War Eagle	1	.15		

LONDON. Nov. 23.

Name and Country of Company	Authorized Capital.	Par value.	Last dividend. Amt.	Last dividend. Date	Quotations. Buyers.	Quotations. Sellers.
		£. s. d.	s. d.		£. s. d.	£. s. d.
Alaska Goldfields, g., Alaska	£300,000	1 0 0	2 3	Jan., 1901	10 0	15 0
Alaska-Treadwell, g., Alaska	1,000,000	5 0 0	1 6	Oct., 1901	3 17 6	4 2 6
Anaconda, c. s., Montana	6,000,000	5 0 0	8 2	Oct., 1901	7 0 0	7 2 6
Copiapo, c., Chile	200,000	2 0 0	1 6	July, 1900	2 10 0	2 15 0
De Lamar, g. s., Idaho	400,000	1 0 0	1 0	May, 1901	4 0	5 0
El Oro, g., Mexico	1,000,000	1 0 0	1 3	July, 1901	1 6 3	1 8 9
Enterprise, g., British Col	200,000	1 0 0			13 9	16 3
Frontino & Bolivia, g., Columbia	140,000	1 0 0	3 0	July, 1901	18 9	1 1 3
Hall, Mg. & Sm., c. s., British Col	325,000	1 0 0			8 6	9 6
Le Roi, g., British Col	1,000,000	5 0 0	5 0	Nov., 1899	5 6 0	5 2 6
Le Roi No. 2, g., British Col	120,000	5 0 0	5 0	July, 1901	2 6 3	2 8 9
Lillie, g., Colorado	250,000	1 0 0	2½	April, 1900	1 3	3 9
Montana, g. s., Montana	660,000	1 0 0	6	April, 1899	4 3	4 9
Mountain Copper, California	1,250,000	5 0 0	5 0	Oct., 1901	4 0 0	4 5 0
Stratton's Independence, Colorado	1,100,000	1 0 0	1 0	Oct., 1901	18 9	1 1 3
St. John del Rev., g., Brazil	600,000	1 0 0	1 0	June, 1901	19 6	1 0 6
Utah Con., g., (High. Boy), Utah	300,000	1 0 0	5 0	May, 1901	4 10 0	5 0 0
Velvet, g., British Col	100,000	1 0 0			7 6	12 6
Ymir, g., British Col	200,000	1 0 0	1 0	Nov., 1901	2 1 3	2 3 9
European:						
Lineras, l., Spain	45,000	3 0 0	7 0	March, 1901	2 10 0	3 10 0
Mason & Barry, c., sul., Port'g'l	420,000	1 0 0	12 6	May, 1901	3 10 0	3 15 0
*Rio Tinto, c., Spain	1,625,000	5 0 0	£1 15s	Nov., 1901	45 12 6	45 17 6
*Rio Tinto, pref., Sprin	1,625,000	5 0 0	2s 6d	Nov., 1901	6 0 0	6 5 0
Tharsis, c., Spain	1,250,000	2 0 0	12 0	May, 1900	5 17 6	6 2 6
Australia and New Zealand:						
Assoc. Gold Mines, W. Australia	500,000	1 0 0	1 6	Jan., 1900	2 3 9	2 6 3
Br'ken Hill Pr'p., s., N. S. Wales	384,000	8 0	1 0	Nov., 1901	1 15 0	1 16 3
*Great Bo'd'r Pr'p., W. Australia	175,000	2 0	6	Sept., 1901	18 0	18 6
Hannan's Brownhill, g., W. Australia	140,000	1 0 0	7 6	Oct., 1900	3 5 0	3 7 6
Ivanh'e Gold C'p., W. Australia	1,000,000	5 0 0	4 0	Oct., 1901	8 1 3	8 3 9
Kalgurlie, g., W. Australia	120,000	1 0 0	rts.	Oct., 1899	3 5 0	3 7 6
L'ke Vi'w Cons., g., W. Australia	250,000	1 0 0	5 0	Oct., 1901	6 3 9	6 6 3
*Mt. Lyell M. E. R. L., c., Tasmia	900,000	3 0 0	2 6	Oct., 1901	3 18 9	4 1 3
Mt. Morgan, g., Queensland	1,000,000	1 0 0	6	Nov., 1901	4 5 0	4 10 0
Waihi, g., New Zealand	330,000	1 0 0	2 6	Dec., 1901	5 13 9	5 16 3
Indian:						
Champion Reef, g., Colar Fields	234,169	10 0	4 0	Sept., 1901	5 16 3	5 18 9
Mysore Gold, Colar Fields	265,000	10 0	4 0	Nov., 1901	5 18 9	6 1 3
Nundyroog, g., Colar Fields	242,000	10 0	1 6	Nov., 1901	2 0 0	2 2 6
Ooregum, g., Colar Fields	290,000	10 0	1 6	Dec., 1901	2 13 9	2 16 3
Ooregum, pref., g., Colar Fields	240,000	10 0	1 6	Dec., 1901	3 2 6	3 5 0
African:						
British S. Africa, ch'd S. Africa	5,000,000	1 0 0	rts.	May, 1899	2 10 0	2 11 3
Cape Copper, S. Africa	600,000	2 0 0	5 0	July, 1901	5 0 0	5 5 0
Cape Copper, pref., S. Africa	150,000	2 0 0	5 0	July, 1901	4 17 6	5 2 6
City and Sub'n (New), g., Transvaal	1,360,000	4 0 0	3 0	Aug., 1899	5 17 6	6 0 0
Crown Reef, g., Transvaal	120,000	1 0 0	18 0	Nov., 1899	14 5 0	14 10 0
De Beers Con., d., Cape Colony	3,950,000	5 0 0	£1	Sept., 1901	38 16 3	38 18 0
Ferreria g., Transvaal	90,000	1 0 0	3 0	Aug., 1899	19 5 0	19 15 9
Geldenhuis Est., g. Transvaal	200,000	1 0 0	10 0	Aug., 1899	5 18 9	6 1 0
Henry Nourse, g., Transvaal	125,000	1 0 0	10 0	Aug., 1899	7 17 6	8 2 3
Jagersfontein, d., Orange F. S	1,000,000	5 0 0	6 0	Dec., 1900	21 5 0	21 10 6
Joh'n'b'g Con. Invet., S. Africa	2,750,000	1 0 0	2 0	Nov., 1899	1 18 9	2 1 0
Jubilee, g., Transvaal	50,000	1 0 0	5 0	Aug., 1899	5 5 0	5 10 3
Langlaagte Est., g., Transvaal	470,000	1 0 0	3 0	Sept. 1899	3 0 0	3 5 0
May Con., g., Transvaal	290,000	1 0 0	0 6	Aug., 1899	4 1 3	4 3 0
Meyer & Charlton, g., Transvaal	100,000	1 0 0	8 0	July, 1899	5 2 6	5 7 9
Namaqua, c., Cape Colony	200,000	2 0 0	8 0	June, 1901	3 17 6	4 2 6
Primrose (New), g., Transvaal	300,000	1 0 0	6 0	Aug., 1899	3 15 0	3 17 6
Rand Mines, g., S. Africa	1,795,956	1 5 0	15 0	Aug., 1899	9 18 9	10 1 3
Robinson, g., Transvaal	2,750,000	5 0 0	8 0	Aug., 1899	9 6 3	9 8 9
Sheba, g., Taansvaal	1,100,000	1 0 0	0 6	July, 1899	16 3	18 9
Sim. & Jack Prp., g., Transvaal	5,000,000	5 0 0	4 0	July, 1899	5 17 6	6 0 0
Wolhuter, g., Transvaal	860,000	4 0 0	2 0	Feb., 1899	3 15 0	4 0 0

c.—Copper. d.—Diamonds. g.—Gold. l.—Lead. s.—Silver. *Ex-dividend.

PARIS. Nov. 7.

Name of Company.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Opening.	Prices. Closing
			Francs.	Fr.	Fr.	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs	27,000,000	2,000	85.00	1,800.00	1,646.00
" " Firminy	"	" "	3,000,000	500	200.00	2,210.00	2,325.00
" " Huta-Bank	Russia	Iron and Steel		500		3,110.00	3,075.00
" " la Marine	France	Steel mfrs	20,000,000	500	65.00	1,280.00	1,365.00
Anzin	"	Coal			320.00	5,295.00	5,200.00
Boleo	Lower Cal	Copper		500	176.00	1,940.00	1,970.00
Briansk	Russia	Coal and Iron		500		414.00	385.00
Champ d'Or	S. Africa	Gold	3,375,000	25	3.75	25.75	25.75
Courrieres	France	Coal	600,000	300	90.00	2,245.00	2,300.00
Dombrowa	Russia	"		500	75.00		
Dourges	France	"	12,000,000	500	10.00	24,700.00	24,700.00
Dynamite Centrale	"	Explosives		500	19.00	554.00	555.00
Escombrera-Bleyberg	Spain	Lead		500	50.00	745.00	735.00
Fraser River	Brit. Col'mb	Gold	250,000	25		4.75	4.00
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	90.25	90.25
Laurium	Greece	Zinc and Lead	16,300,000	500	25.00	355.00	350.00
Malfidano	Italy	Zinc	12,500,000	500	12.50	410.00	400.00
Metaux, Cie. Fran. de	France	Metal dealers	25,000,000	500	22.50	410.00	383.00
Mokta-el-Hadid	Algeria	Iron	18,312,500	500	35.00	802.00	799.00
Napthe Baku	Russia	Petroleum				393.00	389.00
Napthe Nobel	"	"				499.00	499.00
" " parts	"	"				9,680.00	10,000.00
Nickel	N. Caled'nia	Nickel	10,000,000	250	20.00	485.00	520.00
Penarroya	Spain	Coal, etc		500	55.00	1,060.00	1,076.00
Rebecca	Colo'do, U. S.	Gold	5,000,000	25		1.25	1.25
Salines de l'Est	France	Salt		500	6.00	235.00	230.00
Salines du Midi	"	"		500	40.00	895.00	885.00
Vielle Montagne	Belgium	Zinc	9,000,000	80	30.00	572.00	565.00

TORONTO, ONT.

Name of Company.	par val	Nov. 25. H.	Nov. 25. L.	Nov. 26. H.	Nov. 26. L.	Nov. 27. H.	Nov. 27. L.	Nov. 29. H.	Nov. 29. L.	Nov. 30. H.	Nov. 30. L.	Dec. 2. H.	Dec. 2. L.	Sales
Ontario:														
Golden Star	1	.04½	.03½	.04¼	.03½	.04½	.03½	.04	.03½	.04¼	.03	.04¼	.03	500
British Columbia:														
Cariboo McK	1	.17	.13	.14½	.14¼	.16	.13½	.15	.14	.14¾	.12¼	.15	.14½	4,500
Center Star	1	.41	.37	.42	.32	.41	.38	.37½	.35	.33	.28	.36½	.32	
Crows, N. C	25	78.00	74.00	78.00	75.00	80.00	77.00	80.00	76.00	80.00	75.00	80.00	75.00	
Deer Trail	1	.02¾	.02½	.02¾	.02½	.02¾	.02½	.02¾	.02⅜	.02¾	.02¼	.02¾	.02⅜	1,000
Fairview	1	.04½	.03½	.04½	.03½	.04½	.03½	.04	.03½	.04	.03	.04	.03	
Morrison	1	.03½		.04		.03		.04				.03	.02¼	3,000
Mt. Lion	1	.25	.20	.25½	.21	.27	.23	.30	.22	.27	.23	.30	.22	
North Star	1	.28	.24	.27½	.24	.27	.24½	.28	.24	.26	.23¼	.28	.23	
Payne	1	.17	.12½	.17	.14	.15½	.14	.18	.14	.15	.12	.16	.12	
Rambler	1	.54	.49	.55	.50	.55	.49	.52	.50	.55	.52	.56	.52	
Republic	1	.03¾	.03	.04	.03⅜	.04¼	.03¾	.04¼	.03½	.04¼	.03¾	.04¼	.03¾	9,500
Virtue	1	.24	.20	.25	.20	.26	.22	.25	.20	.23½	.21	.24	.20	
War Eagle Cons	1	.12	.09	.13	.10	.13	.10	.13	.10	.12	.10	.12	.10	
Winnipeg	1	.07	.04	.07	.03	.06	.04	.07	.04	.06	.03	.07	.04	
Wonderful	1	.03		.03		.02½		.03		.03		.03		
Develop. Co														
Can. G. F. S	1	.04¼	.03¾	.04¼	.04	.04¼	.03¾	.04¼	.03¾	.04¼	.03¾	.04¼	.03¾	5,000

Total sales, 23,500 shares.

STOCK QUOTATIONS.

PHILADELPHIA, PA. §

Name and Location of Company.	par val	Nov. 28.* H.	Nov. 28.* L.	Nov. 29. H.	Nov. 29. L.	Nov. 30. H.	Nov. 30. L.	Dec. 2. H.	Dec. 2. L.	Dec. 3. H.	Dec. 3. L.	Dec. 4. H.	Dec. 4. L.	Sales
Am. Alkali	...	.....	.....	.....	.....	.....	.....	.50	.....	.....	.....	.....	.....	500
Am. Cement	...	.....	.....	.....	.....	.....	.....	6.25	.....	6.25	.....	.....	.....	125
Beth. Iron, Pa.	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Beth. Steel, Pa.	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Iron, Pa.	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Steel, Pa.	...	.....	.....	25.88	25.50	25.13	.....	25.25	25.13	25.50	25.25	25.25	25.13	4,970
Susq. S. & S., Pa.	...	.....	.....	.....	.....	1.88	.....	1.88	.....	.....	.....	1.88	.....	670
United Gas I., Pa.	...	.....	.....	118⅜	117⅞	118	117¾	117¼	117	117	.....	117¼	116⅞	2,290

§Reported by Townsend, Whelen & Co., 309 Walnut St., Philadelphia, Pa. Total sales 8,525 shares.
* Holiday.

MEXICO.

Nov. 23.

Name of Company.	Shares	Last div'd	Prices. Bid.	Prices. Ask.
Durango:		$	$	$
Ca. Min. de Penoles.	2,500	50.00	3,700	3,900
Augustias, Pozos ...	2,400	5.00	70	75
Guananjuato:				
Cinco Senores y An., aviada	2,000	15.00	210	235
Cinco Senores y An., aviada.	400		170	186
Providencia, San Juan de la Luz.....	6,000	2.00	215	225
Guerrero:				
Garduno y Anexas..	7,200		30	50
Hidalgo:				
Amistad y Concordia.	9,000	1.56	.45½	47
Carmen, aviada.....	1,100		140	160
Ca. Real del Monte.	2,554		550	750
El Encino, aviador .	1,120		40	50
Guadalupe Fresnillo y Annexas	1,000		180	200
La Blanca, aviada...	1,536		295	300
La Blanco, aviada ..	768		220	240
Maravillas y An., aviador.	1,680		175	200
Maravillas el Lobo..	1,000		300	400
Palma y An., aviador.....	1,800		15	25
Sta. Gertrudis y An., aviador, ...	9,600		4	5
Sta. Gertrudis y An., aviador 28,800		0.50	52	53
Santo Tomas Apostol aviador	5,100		10	11
San Rafael y An., aviada	1,200	12.00	780	790
San Rafael y An., aviada.	1,200	8.00	360	380
Soledad, aviada....	960	5.00	285	295
Sorpresa, aviada ..	960	5.00	285	295
Mexico:				
Alacran	2,400		40	50
La Esperanza (El Oro)	3,000	$ 10.00	795	850
Socavon de S. Fern..	2,500		50	60
Michoacan:				
Luz de Borda, aviador.	3,000		10	13
Luz de Borda, aviada	1000		5	7
San Luis Potosi:				
Concepcion y An....	3,000		125	135
El Barreno, aviador.	2,000	2.00	43	46
Sta. Maria de la Pa.	2,400	15.00	540	555
Santa Fe	2,400		20	30
San Diego y Anexas.	2,400	4.00	125	130
Zacatecas:				
Candelaria y Pinos..	2,500		325	335
San Carlos y Annexas	2,500	15.00	440	460
Sta. Maria de Gaud..	2,500	10.00	320	325
Miscellaneous:				
Bartolome de Medina	2,000	2.00	45	50
Guadalupe Hacienda.	10,000	2.00	195	205
La Luz Hac. (Pachuca)	6,000		44	45
La Reina (Chihuahua)	192		2,500	3,500
Naica (Chihuahua)..	100		2,450	2,550
Natividad (Oaxaca) aviador	1,800	4.00	400	500
National (Oaxaca) aviador	1,800	4.00	400	500
San Francisco Hac...	6,000	1.00	62	64
Santa Ana Huantla Morelos	4,000		50	70
Union Hacienda	3,000	5.00	140	160

ST. LOUIS, MO.*

Dec. 2.

Name.	Shares.	Par.	Bid.	Ask.	Name.	Shares.	Par.	Bid.	Ask.
Am.-Nettie, Colo....	300,000	$10	$1.15	$1.30	Doe Rum Lead Co	10,000	$100	$128.,00	$135.00
Catherine Lead, Mo.	50,000	10	3.00	4.00	Granite Bimet, Mt.	1,000,000	10	2.80	2.90
Central Lead, Mo...	10,000	100	130.00	135.00	K. & Tex. Coal, Mo.	25,000	100	44.00	45.00
Columbia Lead, Mo.	50,000	10	12.50	13.00	Renault Lead, Mo...	30,000	10	9.50	11.00
Con. Coal, Ill.....	50,000	100	18.00	19.50	St. Joe Lead, Mo...	300,000	10	19.00	20.00

*From our special correspondent.

SPOKANE, WASH. *

Nov. 29.

Name of Company.	Par val.	B.	A.	Sales.	Name of Company.	Par val.	B.	A.	Sales.
Black Tail	$1	.09⅛	.10	1,000	Princess Maud.....	0.10	.01⅞	.02¾	3,000
Crystal	1	.06	.09	.....	Quilp	1	.20	26	.....
Deer Trail Con.....	1	.02⅝	.03	23,000	Rambler Cariboo...	0.25	.50	.55	.....
Gold Ledge	1	.01⅛	.01⅝	20,000	Reservation	1	.04⅛	.05	23,000
Lone Pine-Surp. Con.	1	.04½	.06¼	7,000	Sullivan	1	.09	.10¼	1,500
Morning Glory.....	0.10	.01½	.02¼	.....	Tom Thumb	1	.13¾	.16	3,000
Mountain Lion.....	1	.23¼	.25	1,000	.....				

SALT LAKE CITY.*

Nov. 30

Name of Company.	Location	Shares.	Par Value.	Quotations. High.	Quotations. Low.	Sales.
Ajax	Tintic	300,000	$10	.82¼	.75	20,900
Anchor	Park City	150,000	10	2.00	....	
Bullion Beck	Tintic	100,000	10	2.00	....	
California	Park City	300,000	1	.79	.52¾	36,800
Century	Park Valley	150,000	1	2.50	2.05	800
Carisa	Tintic	500,000	1	.96	.73	111,600
Con. Mercur	Mercur	1,000,000	5	1.61	1.50	2,367
Creole	Park City	150,000	1	.30	....	
Daly	Park City	150,000	20	2.00	1.60	
Daly West	Park City	150,000	20	31.50	29.00	.605
Dexter	Tuscarora	200,000	5	.30	.20	
Eagle & B. Bell	Tintic	250,000	1	1.07	1.04	400
Grand Central	Tintic	250,000	1	3.00	2.75	
Horn Silver	Frisco	400,000	25	1.80	1.50	
L. Mammoth	Tintic	150,000	1	2.25	1.90	4,000
Mammoth	Tintic	400,000	25	1.30	1.25	
May Day	Tintic	400,000	25	1.04	.91	37,100
Ontario	Park City	150,000	100	10.20	10.00	.500
Sacramento	Mercur	1,000,000	5	.12	.10	5,500
Silver King	Park City	150,000	26	80.00	70.00	
Star Con.	Tintic	500,000	1	30¼	.25	5,100
Swansea	Tintic	100,000	5	1.00	....	
So. Swansea	Tintic	300,000	1	.30	.28	
Showers Con.	Tintic	400,000	5	.15	....	
Sunshine	Mercur	250,000	10	.14	.12½	200
Tetro	Tintic	500,000	5	.35	.30¼	1,200
Tesora	Tintic	400,000	1	.28	.10	67,700
U. Sunbeam	Tintic	150,000	1	.45	.40	900
Uncle Sam	Tintic	500,000	1	.80	.74	39,900
West Mng. Glory	Tintic	500,000	10	.06½	.06	6,000
Victor	Tintic	500,000	1	.59½	.58	6,900
Yankee Con.	Tintic	500,000	1	4.01	4.00	1,300
Ben Butler	Bingham	500,000	1	.16	.14	11,200
Boss Tweed	Tintic	250,000	1	.80	.66	9,177

*By our Special Correspondent. Total sales, 438,544 shares.

DIVIDENDS.

COAL, IRON AND INDUSTRIALS.

Name and Location of Company.	Authorized Capital Stock.	Shares Issued	Par Val.	Dividends. Paid, 1901.	Dividends. Total to Date.	Latest. Date.	Latest. Amt.
Ala. Coal & Iron, pf. Ala.	$2,500,000	25,000	100	$174,970	$293,750	Dec. 1901	$1.75
Allis-Chalmers, pf..U. S.	25,000,000	162,500	100	568,750	568,750	Nov. 1901	1.75
Altoona C'l & Coke..Pa.	2,500,000	250,000	10	75,000	75,000	Jan. 1901	.30
Am. Agr. Chem. pf.U. S.	20,000,000	171,350	100	1,024,590	2,554,590	Oct. 1901	3.00
American Cement....Pa.	2,100,000	200,000	10	160,000	300,000	July 1901	.40
American Coal.....Md.	1,500,000	60,000	25	150,000	1,132,500	Sept. 1901	1.25
Am. Iron & St'l, com.Pa.	17,000,000	34,000	50	18,700	484,100	Sept. 1901	.15
Am. Iron & Steel pf..Pa.	3,000,000	60,000	50	150,000	312,500	Oct. 1901	.62½
Aztec Oil.....Cal.	250,000	235,000	1	9,400	9,400	April 1901	.02
Bethlehem Steel.....Pa.	15,000,000	300,000	50	425,000	1,325,000	Sept. 1901	.25
Calif. Oil & Gas....Cal.	2,000,000	200,000	10	540,000	540,000	Sept. 1901	.70
Cambria Steel.....Pa.	50,000,000	900,000	50	2,150,000	3,750,000	Dec. 1901	1.50
Central Oil.....W. Va.	1,500,000	60,000	25	25,000	67,500	May 1901	.37½
Central Oil.....Cal.	1,000,000	800,000	1	63,267	136,247	Oct. 1901	.03
Cent'l Pt. Con. Oil..Cal.	200,000	190,000	1	34,200	41,800	Nov. 1901	.02
Colo. Fuel & Iron..Colo.	38,000,000	230,000	100	682,000	837,500	Oct. 1901	1.75
Colo. Fuel&Iron pf. Colo.	2,000,000	20,000	100	160,000	1,320,000	Aug. 1901	4.00
Consolidation Coal...Md.	10,250,000	102,500	100	205,000	5,318,000	Feb. 1901	2.00
Consolidated Coal.....Ill.	5,000,000	50,000	100	50,000	50,000	July 1901	1.00
Continental Oil.....Cal.	300,000	260,000	1	10,400	10,400	July 1901	.01
Dabney Oil.....Cal.	1,000,000	1,000,000	1	10,000	10,000	May 1901	.01
Dominion Coal.....N. S.	3,000,000	30,000	100	240,000	1,920,000	July 1901	4.00
Empire St'l&Iron, pf.N.J.	5,000,000	23,700	100	71,000	248,850	July 1901	4.00
Four Oil.....Cal.	300,000	300,000	1	12,000	12,000	May 1901	.01
Fullerton Oil.....Cal.	25,000	25,000	1	750	750	June 1901	.03
Gen'l Chem., com..U. S.	12,500,000	71,679	100	286,716	700,982	Dec. 1901	1.00
Gen'l Chem. pf....U. S.	12,500,000	90,860	100	507,990	1,273,868	Oct. 1901	1.50
Globe Oil.....Cal.	600,000	600,000	1	3,000	3,000	April 1901	.00½
Heywood Oil.....Tex.	800,000	800,000	1	32,000	32,000	Nov. 1901	.04
Green Mtn. Oil.....Cal.	500,000	500,000	1	5,000	5,000	Oct. 1901	.01
Hanford Oil.....Cal.	20,000	2,000	10	2,000	2,000	Oct. 1901	1.00
Dominion I. & S., pf.N. S.	5,000,000	50,000	100	175,000	175,000	Oct. 1901	3.50
Gray Eagle Oil.....Cal	250,000	100,000	2½	97,000	217,000	May 1901	.47
Home Oil.....Cal.	100,000	100,000	1	52,500	252,500	Nov. 1901	.07½
Homestake Oil.....Cal.	100,000	10,000	10	16,500	36,000	Nov. 1901	.15
Jeffer. & Clearf. Coal.Pa.	1,500,000	15,000	100	.....	30,000	Aug. 1900	2.00
Jeffer. & Clearf. pf...Pa.	1,500,000	15,000	100	75,000	450,000	Aug. 1901	2.50
Kern Oil.....Cal.	100,000	100,000	1	.....	350,000	Dec. 1900	.25
Lehigh Coal & Nav...Pa.	14,346,650	286,933	50	860,798	19,377,788	Nov. 1901	1.50
Los. Angeles & Trns.Cal.	250,000	10,000	1	2,500	2,500	Feb. 1901	.25
Maryland Coal, pf....Md.	1,885,005	18,850	100	47,125	687,994	July 1901	2.50
Monongа. R. Coal, pf..Pa.	$10,000,000	198,300	$50	$694,330	$1,041,495	July 1901	$1.75
Montana Coal & C.Mont.	5,000,000	200,000	25	.....	120,000	Oct. 1900	.30
Nat'l Salt, com.....U. S.	7,000,000	70,000	100	420,000	615,000	Nov. 1901	1.50
Nat'l Salt, pf.....U. S.	5,000,000	50,000	100	350,000	875,000	Nov. 1901	1.75
New Central Coal....Md.	1,000,000	50,000	20	.....	490,000	April 1900	.40
Oceanic Oil.....Cal.	100,000	100,000	1	.....	2,000	Dec. 1900	.01
Ohio & Ind. N't Gas.U.S.	10,000,000	90,000	100	360,000	720,000	Dec. 1901	1.00
Oil City Petroleum..Cal.	500,000	500,000	1	15,000	15,000	Nov. 1901	.00½
Pacific Coast Borax..Cal.	2,000,000	19,000	100	209,000	971,500	Nov. 1901	1.00
Park Crude Oil.....Cal.	100,000	82,146	1	.....	4,897	Sept. 1900	.01
Penn. Salt Mfg.....Pa.	5,000,000	100,000	50	300,000	12,850,000	Sept. 1901	3.00
Phila. Gas, com.....Pa.	14,752,131	295,042	50	848,248	1,585,829	Oct. 1901	.75
Phila. Gas, pf.....Pa.	3,998,350	79,967	50	199,918	399,836	Aug. 1901	1.25
Pittsburg Coal, pf...Pa.	32,000,000	297,012	100	2,079,084	4,158,168	Oct. 1901	1.75
P'ducers' & Con. Oil.Cal.	1,000,000	10,000	100	4,000	56,500	Mar. 1901	.10
Reed Crude Oil.....Cal.	2,000,000	2,000,000	1	50,000	50,000	April 1901	.02½
Rep. I. & Steel, pf..U. S.	25,000,000	203,069	100	1,421,484	3,198,338	Oct. 1901	1.75
Shawmut Oil.....W. Va.	1,250,000	50,000	25	100,000	100,000	Nov. 1901	.50
Sloss-Shef. S. & I.pf.Ala.	20,000,000	67,000	100	466,750	807,750	Oct. 1901	1.75
So. Cal. Oil & Fuel..Cal.	300,000	200,000	1	33,000	39,000	Nov. 1901	.01½
Stand. Oil (of N. J.).U.S.	100,000,000	970,000	100	46,660,000	120,385,000	Dec. 1901	8.00
Penna. Steel, pf.....Pa.	25,000,000	165,000	100	577,500	577,500	Nov. 1901	3.50
Senator Oil.....Cal.	200,000	180,920	1	.....	1,810	Sept. 1901	.01
Sunday Lake Iron..Mich.	1,000,000	40,000	25	40,000	40,000	Feb. 1901	1.00
Susquehan. I. & S.,pf.Pa.	1,500,000	300,000	5	67,500	582,500	July 1901	.15
Tenn.C.I.&R.R.com.Tenn.	23,000,000	225,536	100	.....	1,102,144	Nov. 1900	2.00
Tenn. C.I.&R.R.,pf.Tenn.	248,000	2,480	100	19,840	262,880	Nov. 1901	2.00
Tex. & Pacific Coal.Tex.	2,000,000	20,000	100	120,000	1,920,000	Oct. 1901	1.50
Union Oil.....Cal.	10,000,000	52,672	100	118,511	118,511	Oct. 1901	1.35
U. S. Crude Oil.....Cal.	100,000	100,000	1	22,000	25,220	Nov. 1901	.02
U. S. Marble.....Wash.	2,000,000	2,000,000	1	38,750	38,750	Oct. 1901	.00¾
United States Oil..W.Va.	2,500,000	100,000	25	.....	575,000	Oct. 1900	.50
U. S. St. Corp, com..U.S.	550,000,000	5,083,638	100	10,143,462	10,143,462	Dec. 1901	1.00
U. S. Steel Corp. pf, U.S.	550,000,000	5,102,314	100	17,824,962	17,824,962	Nov. 1901	1.75
Va.-Caro Chem.,com.U.C.	12,000,000	120,000	100	480,000	1,650,000	Dec. 1901	1.00
Va.-Caro Chem., pf..U.S.	12,000,000	120,000	100	920,000	5,100,000	Oct. 1901	2.00
Warner Oil.....Cal.	200,000	200,000	1	10,000	10,000	June 1901	.01
Westmoreland Coal...Pa.	5,000,000	250,000	50	750,000	6,750,000	Oct. 1901	1.50
West Shore Oil.....Cal.	100,000	100,000	1	15,000	15,000	Oct. 1901	.05
Whittier Con. Oil....Cal.	1,000,000	1,000,000	1	.....	5,600	Dec. 1900	.01

DIVIDENDS.

GOLD, SILVER, COPPER, LEAD, QUICKSILVER AND ZINC COMPANIES.

Name and Location of Company.	Author-ized Capital Stock	Shares. Issued.	Par Val	Dividends. Paid 1901.	Total to Date.	Latest Date.	Amt.
Aberdeen, c.....N.M.	$1,000,000	$32,175	$25	$32,175	$32,175	Nov. 1901	$1.00
Acacia, g.....Colo.	1,500,000	1,500,000	$1	.....	45,000	Dec. 1900	.01
Adams, s. l. c.....Colo.	1,500,000	150,000	10	15,000	716,000	Oct. 1901	.05
Aetna Con., q.....Cal.	500,000	100,000	5	.....	225,000	April 1900	.15
Alaska Goldfields..Alask.	1,500,000	250,000	5	135,000	260,000	Jan. 1901	.54
Alaska-Mexican, g.Alask.	1,000,000	180,000	5	.....	465,381	Oct. 1900	.10
Alaska-Treadwell, g.Alas.	5,000,000	200,000	25	300,000	4,820,000	Oct. 1901	.37½
Amalgamated, c....Mont.	155,000,000	1,538,879	100	8,304,491	15,809,491	Oct. 1901	1.50
Amazon, g.....Colo.	600,000	600,000	1	.....	121,881	May 1900	.10
Am. Sm. & Ref., pf.U.S.	50,000,000	500,000	100	2,709,000	5,391,553	Oct. 1901	1.75
Am. Zinc, L. & Sm...Mo.	2,500,000	60,000	25	.....	180,000	Jan. 1900	1.00
Anaconda, c.....Mont.	30,000,000	1,200,000	25	2,400,000	19,350,000	April 1901	2.00
Argonaut, g.....Cal.	2,000,000	200,000	10	.....	490,000	May 1900	.05
Arizona, c.....Ariz.	3,775,000	.....	..	865,821	2,330,669	Nov. 1901	17.50
Atlantic, c.....Mich.	1,000,000	40,000	25	80,000	880,000	Feb. 1901	2.00
Bald Butte, g. s...Mont.	250,000	250,000	1	165,000	1,087,148	Nov. 1901	.06
Boston, q.....Cal.	1,000,000	100,000	10	.....	20,000	Jan. 1900	.10
Boston & Colo. Sm..Colo.	750,000	15,000	50	45,000	360,100	Oct. 1901	.75
Boston Duenweg, z...Mo.	1,000,000	40,000	10	.....	56,000	June 1900	.10
Boston Get There, z.Mo.	250,000	22,500	10	.....	20,250	April 1900	.10
Boston Gold-Cop.Sm..Colo.	1,000,000	1,000,000	1	100,000	150,000	Nov. 1901	.02½
Boston-Little Cir, z. l.Mo.	100,000	100,000	1	25,000	112,500	Oct. 1901	.25
B. & M.Con.,c.s.g..Mont.	3,750,000	150,000	25	5,250,000	26,225,000	Dec. 1901	5.00
Breece, l. s.....Colo.	5,000,000	200,000	25	70,000	170,000	Dec. 1901	.20
Buffalo Hump, g...Idaho.	1,000,000	100,000	10	25,000	300,000	Jan. 1901	.10
Bullion-Beck & Ch..Utah.	1,000,000	100,000	10	.....	2,498,400	June 1900	.10
Bunker Hill & Sul.Idaho.	3,000,000	300,000	10	252,000	1,305,000	Dec. 1901	.07
Butte & Boston, c.Mont.	2,000,000	200,000	10	600,000	1,600,000	Nov. 1901	3.00
Butterfly-Ter'ble, g..Colo.	1,500,000	1,250,000	1	31,250	31,250	Oct. 1901	.00½
Calumet & Hecla,c..Mich.	2,500,000	100,000	25	4,500,000	77,350,000	Oct. 1901	15.00
Carisa, g. s. c.....Utah.	500,000	500,000	1	30,000	30,000	Nov. 1901	.03
Cent'l-Eurek.g.s.l.c Utah.	5,000,000	100,000	25	200,000	2,617,700	Oct. 1901	.50
Center Creek, l. z....Mo.	1,000,000	100,000	10	20,000	60,000	July 1901	.10
Cen. Eureka, g. s....Cal.	4,000,000	398,425	10	15,750	15,750	Sept. 1901	.02½
Central Lead, l.....Mo.	1,000,000	10,000	100	55,000	262,000	Nov. 1901	.50
Cherry Hill, g.....Cal.	1,000,000	1,000,000	1	17,500	27,500	Oct. 1901	.00¼
Columbia, l.....Mo.	600,000	60,000	10	.....	12,125	June 1900	.05
Con. Cal. & Va., s.g.Nev.	540,000	216,000	2½	64,800	3,963,600	July 1901	.10
Con. Mercur, new,g.Utah.	5,000,000	1,000,000	5	375,000	485,000	Nov. 1901	.12½
Consol. (new), g....Colo.	2,500,000	1,900,000	1	133,000	133,000	Nov. 1901	.01
Cr'de & Crip. Ck, g..Colo.	800,000	800,000	1	16,000	16,000	May 1901	.02
Crip. Ck. Con., g....Colo.	2,000,000	2,000,000	1	.....	160,000	Mar. 1900	.08
Croesus, g.....Cal.	1,000,000	200,000	5	106,000	257,300	Nov. 1901	.05
Crowned King, g.s...Ariz.	6,000,000	600,000	10	.....	242,760	May 1901	.02
Dal. & Lark,g.s.l..Utah.	2,500,000	2,500,000	1	256,725	344,225	July 1901	.10½
Daly-West, g.....Utah	3,000,000	150,000	20	540,000	1,147,500	Nov. 1901	.40
De Lamar, g. s...Idaho.	2,000,000	400,000	5	96,000	2,490,000	May 1901	.24
Dewey Con., g....Utah.	10,000	10,000	1	3,250	5,850	June 1901	.10
Doctor Jack P., g..Colo.	3,000,000	2,900,000	1	232,000	232,000	Aug. 1901	.01
Doe Run, l.....Mo.	1,500,000	10,000	100	60,000	477,072	Oct. 1901	1.50
Duck'n,c.l.sul(ord.) Tenn.	375,000	6,000	50	.....	133,750	Nov. 1900	2.50
Ducktown (fndr).Tenn.	1,000	200	5	.....	41,250	May 1900	162.50
Elkton Con., g.....Colo.	3,000,000	2,500,000	1	225,000	1,204,461	Sept. 1901	.03
Emp. St.-Idaho,l.s.Idaho.	6,000,000	505,542	10	535,094	1,207,784	Nov. 1901	.10
Ferris-Haggerty, c.Wyo.	1,000,000	1,000 000	1	5,000	15,000	Sept. 1901	.01
Florence, s.....Mont.	2,500,000	400,000	5	.....	223,780	Mar. 1900	.05
Gemini .....Utah.	500,000	5,000	100	.....	700,000	Aug. 1900	10.00
Gold Belt, g.....Colo.	1,250,000	1,250,000	1	.....	112,500	Aug. 1900	.09
Gold Coin of Vic., g.Colo.	1,000,000	1,000,000	1	330,000	930,000	Nov. 1901	.03
Gold Deposit, g....Colo.	500,000	500,000	1	.....	10,000	Mar. 1900	.02
Gold King, g.....Colo.	1,000,000	936,850	1	56,212	412,214	July 1901	.03
Golden Cycle, g.....Colo.	1,000,000	200,000	5	30,000	408,500	Mar. 1901	.05
Golden Eagle, g....Colo.	500,000	489,015	1	9,780	98,916	Sept. 1901	.01
Grand Central, g...Utah.	250,000	250,000	1	.....	691,250	Nov. 1900	.10
Grass Valley Expl...Cal.	100,000	30,000	2	.....	30,000	Jan. 1900	.25
Gr. Gold Belt, g....Colo.	5,000,000	3,800,000	1	.....	76,000	June 1900	.02
Gwin, g. .....Cal.	1,000,000	100,000	10	115,000	266,000	Nov. 1901	.05
Hecla, l. s.....Idaho.	250,000	1,000,000	¼	.....	100,000	Dec. 1900	.02
Hecla Con., s. l...Mont.	1,500,000	30,000	50	30,000	2,250,000	July 1901	.50
Helena Con., g.....Ore.	1,500,000	1,200,000	1	53,000	98,000	Sept. 1901	.00½
Hidden Treasure, g..Cal.	360,000	36,000	10	.....	457,452	Sept. 1900	.10
Holy Terror, g.....S. D.	500,000	500,000	1	.....	172,000	Jan. 1900	.01

Name and Location of Company.	Stock Author-ized Capital	Shares. Issued.	Par Val	Dividends. Paid 1901.	Total to Date.	Latest Date.	Amt.
Homestake, g.....S. D.	$21,000,000	210,000	$100	$1,155,000	$10,558,750	Nov. 1901	$0.50
Horn-Silver g.s.c.z.l.Utah	10,000,000	400,000	25	32,000	5,302,000	Sept. 1901	.08
Independ. Con., g...Colo.	2,500,000	2,500,000	1	181,375	281,375	Apr. 1901	.04
Ingham Con., g.....Colo.	750,000	1,359,600	½	33,981	33,981	Aug. 1901	.00¼
Iowa, g. s. l.....Colo.	1,666,667	1,666,667	1	66,667	203,501	Oct. 1901	.01
Iron Silver .....Colo.	10,000,000	500,000	20	.....	2,550,000	Dec. 1900	.10
Isabella, g.....Colo.	2,250,000	2,250,000	1	22,500	742,500	Mar. 1901	.01
Jamison, g.....Cal.	3,900,000	390,000	10	11,700	62,400	Sept. 1901	.03
Katinka, g.....Colo.	1,000,000	1,000,000	1	10,000	10,000	Nov. 1901	.01
Kennedy, g.....Cal.	10,000,000	100,000	100	10,000	1,801,000	June 1901	.05
La Fortuna, g.....Ariz.	250,000	250,000	1	137,500	1,053,500	Nov. 1901	.05
Lake City, g.....Colo.	50,000	50,000	1	.....	3,875	May 1900	.01
Last Dollar, g.....Colo.	1,500,000	1,500,000	1	60,000	150,000	Feb. 1901	.02
Lightner, g.....Cal.	125,000	102,255	1	17,894	28,117	May 1901	.10
Lillie, g.....Colo.	1,250,000	250,000	5	.....	349,183	April 1900	.05
Mammoth, g. s. c..Utah.	10,000,000	400,000	25	200,000	1,990,000	Nov. 1901	.05
Mary McKinney, g..Colo.	1,000,000	1,000,000	1	150,000	330,000	Oct. 1901	.03
May Day .....Utah.	100,000	400,000	¼	18,000	18,000	July 1901	.02½
Midget, g.....Colo.	1,000,000	1,000,000	1	15,000	135,000	July 1901	.15
Modoc, g. s.....Colo.	500,000	500,000	1	35,000	225,000	July 1901	.01
Mont. Ore Purch'g.Mont.	2,500,000	81,000	25	722,000	2,322,000	Nov. 1901	2.00
Monument, g.....Colo.	300,000	300,000	1	3,000	21,124	Feb. 1901	.01
Morn. Star Drift, g..Cal.	240,000	2,400	100	.....	854,400	Sept. 1900	3.00
Mountain, c.....Cal.	6,250,000	250,000	25	720,000	3,033,750	Oct. 1901	1.20
Mt. Diable, s.....Nev.	5,000,000	50,000	100	.....	260,271	Jan. 1900	.10
Napa Con., q.....Cal.	700,000	100,000	7	40,000	1,140,000	Oct. 1901	.10
Nat'l Lead, com....U. S.	15,000,000	149,054	100	.....	1,341,486	Mar. 1900	1.00
Nat'l Lead, pfd....U. S.	15,000,000	149,040	100	1,043,280	11,883,560	Dec. 1901	1.75
New Idria, q.....Cal.	500,000	100,000	5	70,000	320,000	Oct. 1901	.10
New Jersey Zinc....U. S.	10,000,000	100,000	100	400,000	3,200,000	Feb. 1901	4.00
N. L'dville Home,g..Colo.	2,000,000	2,000,000	1	125,000	225,000	Nov. 1901	.00⅜
N. Zealand Con., g..Colo.	1,000,000	765,000	1	45,900	45,900	Nov. 1901	.01
Nugget, g.....Colo.	1,000,000	991,000	1	29,730	84,730	July 1901	.01
Old Col. Zinc & Sm..Mo.	1,100,000	65,909	10	69,908	138,184	Nov. 1901	.25
Omega, g.....Colo.	1,500,000	1,200,000	1	.....	18,188	June 1900	.01½
Ontario, s. l.....Utah	15,000,000	150,000	100	90,000	14,737,000	Dec. 1901	.30
Osceola, c.....Mich.	2,500,00	95,900	25	575,400	4,245,800	Dec. 1901	3.00
Parrot, c.....Mont.	2,300,000	229,850	10	1,264,175	5,658,000	Oct. 1900	.10
Penn. Con., g.....Cal.	5,150,000	51,500	100	.....	161,325	May 1900	.10
Plumas Eureka, g...Cal.	1,406,250	150,625	10	33,750	2,831,294	April 1901	.24
Pointer, g.....Colo.	1,250,000	1,250,000	1	25,000	25,000	June 1901	.01
Portland, g.....Colo.	3,000,000	3,000,000	1	720,000	4,027,080	Oct. 1901	.06
Quicksilver, pf.....Cal.	4,300,000	43,000	100	21,500	1,888,411	May 1901	.50
Quincy, c.....Mich.	2,500,000	100,000	25	900,000	12,870,000	Aug. 1901	6.01
Richmond, g. s. l....Nev.	1,350,000	54,000	25	.....	4,453,797	Dec. 1900	.24
Rocco-H'stake, g. s..Nev	300,000	300,000	1	45,000	54,000	Oct. 1901	.01½
Sacramento, g.....Utah	5,000,000	1,000,000	5	15,000	133,000	Aug. 1901	.00½
St. Joseph, l.....Mo.	3,000,000	250,000	10	112,500	3,422,000	Sept. 1901	.15
Santa Rita, g.....Colo.	1,000,000	1,000,000	1	.....	4,000	July 1900	.02
Silver King, g. s. l.Utah	3,000,000	150,000	20	1,075,000	4,525,000	Nov. 1901	.66⅔
Silver Shield, g.....Utah	300,000	300,000	1	3,000	4,500	Feb. 1901	.00½
Smuggler, s. l. z....Colo.	1,000,000	1,000,000	1	330,000	2,125,000	Nov. 1901	.03
Southern Boy, g.....Colo.	1,250,000	875,000	1	.....	17,500	May 1900	.02
Quincy .....Utah	3,000,000	150,000	20	687,500	687,500	Nov. 1901	.84
Uncle Sam Con.....Utah	500,000	500,000	1	45,000	45,000	Nov. 1901	.03
S. Swansea, s. l....Utah	300,000	275,000	1	12,500	172,500	Mar. 1901	.05
S. Winnie, g. s.....Colo.	250,000	250,000	1	12,500	15,000	Sept. 1901	.01
Standard Con., g. s..Cal.	2,000,000	178,394	10	71,356	4,035,458	Nov. 1901	.10
Standard, s. .....Idaho	500,000	500,000	1	275,000	2,440,000	Nov. 1901	.05
Stratton's Independ.Colo.	5,500,000	1,000,007	5	787,504	3,552,856	Oct. 1901	.24
Swansea, s. l.....Utah	500,000	100,000	5	55,000	361,500	Nov. 1901	.05
Tamarack, c.....Mich.	1,500,000	60,000	25	600,000	7,890,000	June 1901	10.00
Tomboy (New), g. s.Colo.	1,500,000	300,000	5	72,000	288,000	June 1901	.24
Town Topics, g. c..Colo.	1,000,000	1,000,000	1	15,000	15,000	Nov. 1901	.00½
Union, z. l.....Kas.	500,000	500,000	1	55,000	90,000	Nov. 1901	.01
United, z. l., pf.....Mo.	6,000,000	14,998	25	29,996	60,259	Oct. 1901	.50
Utah, g.....Utah	1,000,000	100,000	10	18,000	199,000	Nov. 1901	.02
Utah Con., c.....Utah	1,500,000	300,000	5	732,000	732,000	Dec. 1901	1.22
Vindicator Con., g...Colo	1,500,000	1,100,000	1	170,000	664,000	Oct. 1901	.05
Wolverine, c.....Mich.	1,500,000	60,000	25	240,000	750,000	Oct. 1901	2.00
Yellow Aster, g.....Cal.	1,000,000	100,000	10	.....	459,410	Dec. 1900	.10
Zoe, g.....Colo.	1,500,000	1,500,000	1	.....	7,500	Dec. 1900	.00½

British Columbia, Central and South America, Mexico.

Name and Location of Company.	Author-ized Capital Stock.	Shares. Issued.	Par Val.	Dividends. Paid 1901.	Total to date.	Latest Date.	Amt.
Amistad y Concordia.Mex.	$480,000	9,600	$50	$16,608	$16,608	July 1901	$1.73
Athabasca, g.....B. C.	550,000	110,000	5	.....	25,000	Oct. 1900	.23
Boson, s. l.....B. C.	250,000	50,000	5	12,500	12,500	April 1901	.25
Caribou McKinney,g.B. C.	1,250,000	1,250,000	1	.....	478,087	Oct. 1900	.01½
Center Star, g.....B. C.	3,500,000	3,500,000	1	105,000	175,000	April 1901	.01
Copiapo, c.....Chile	1,125,000	112,500	10	40,500	2,758,500	July 1901	.36
El Oro, g. s.....Mex.	5,000,000	1,000,000	5	540,000	780,000	July 1901	.30
Esperanza, s. g....Mex.	150,000	3,000	50	170,580	920,580	Dec. 1901	4.40
Frontino & Bol. c..Colom.	643,310	128,662	5	102,637	1,211,703	July 1901	.72
Grand Central, g. s.Mex.	1,500,000	250,000	5	.....	840,000	Jan. 1900	.48
Guadalupe Mill.....Mex.	1,000,000	10,000	100	156,950	3,381,950	Nov. 1901	1.37
Guerrero Con., c.....Mex.	6,000,000	600,000	10	220,000	220,000	Sept. 1901	.20
Le Roi No. 2, g....B. C.	3,000,000	120,000	25	144,000	144,000	June 1901	1.20
Mexico Capital .....Mex.	125,000	250,000	½	35,000	35,000	July 1901	.08
Natividad, s. g.....Mex.	36,000	2,400	15	24,156	110,556	Sept. 1901	1.83
N. Y.& Hon.Ros., s.g.C.A.	1,500,000	150,000	10	225,000	1,655,000	Nov. 1901	.20
North Star, s. l....B. C.	1,500,000	1,300,000	1	136,500	253,500	Dec. 1901	.01½

Name and Location of Company.	Author-ized Capital Stock.	Shares. Issued.	Par Val.	Dividends. Paid 1901.	Total to date.	Latest Date.	Amt.
Payne Con., s. l...B. C.	$3,000,000	2,600,000	$1	$78,000	$1,438,000	Jan. 1901	$0.03
Penoles (Map.), s. l.Mex.	125,000	2,500	50	638,975	1,296,175	Nov. 1901	22.63
Providencia (S. F.).Mex.	90,000	6,000	15	5,520	89,520	Aug. 1901	.92
Ramb.-Cariboo, s. l.B. C.	1,250,000	1,250,000	1	25,000	130,000	Oct. 1901	.01
Reco, s. l.....B. C.	1,000,000	1,000,000	1	.....	287,500	Aug. 1900	.10
St. J. del Rey, g..Brazil	3,000,000	425,482	5	102,116	13,736,107	June 1901	.24
San Carlos.....Mex.	12,500	2,500	5	195,854	195,854	Nov. 1901	6.79
Sorpressa .....Mex.	19,200	960	20	20,764	179,164	Sept. 1901	2.29
Sta. Maria de Guad.Mex.	2,500	2,500	1	132,600	292,600	Dec. 1901	4.53
San Francisco Mill.Mex.	150,000	6,000	25	34,140	223,140	Nov. 1901	.45
San Diego de Char..Mex.	96,000	2,400	40	27,408	56,708	Oct. 1901	1.83
Sta. Gertrudis.....Mex.	1,440,000	28,800	50	61,632	2,531,232	Sept. 1901	.22
San Rafael.....Mex.	60,000	2,400	25	103,608	1,687,608	Sept. 1901	3.66
St. Eugene Con., s.l.B. C.	3,500,000	3,500,000	1	210,000	210,000	April 1901	.03
War Eagle Con.,g.s.c.B.C.	2,000,000	1,750,000	1	.....	545,250	Feb. 1900	.01½
Ymir, g.....B. C.	1,000,000	200,000	5	192,000	240,000	Nov. 1901	.24
Union Mill.....Mex.	150,000	3,000	50	31,080	346,080	Oct. 1901	2.29

CHEMICALS, MINERALS, RARE EARTHS, ETC. CURRENT WHOLESALE PRICES.

Abrasives—	Cust. Meas.	Price.
Carborundum, f.o.b. Niagara Falls, Powd., F. FF. FFF..	lb.	$0.08
Grains	"	.10
Corundum, N. C.	"	.07@.10
Chester, Mass.	"	.04½@.05
Crushed Steel, f.o.b. Pittsburg	"	.05½
Emery, Turkish flour, in kegs.	"	.03½
Grains, in kegs	"	.03@.05½
Naxos flour, in kegs	"	.03½
Grains, in kegs	"	.05@.05½
Chester flour, in kegs	"	.03½
Grains, in kegs	"	.05@.05½
Peekskill, f.o.b. Easton, Pa., flour, in kegs	"	.01½
Grains, in kegs	"	.02½
Crude, ex-ship N. Y.: Abbott (Turkey)	lg. ton	26.50@30.00
Kuluk (Turkey)	"	22.00@24.00
Naxos (Greek) h. gr	"	26.00
Garnet, as per quality	sh. ton	25.00@35.00
Pumice Stone, Am. powd.	lb.	.01@.02
Italian, powdered	"	.01½
Lump, per quality	"	.04@.40
Rottenstone, ground	"	02½@.04½
Lump, per quality	"	.03@.20
Rouge, per quality	"	.10@.30
Steel Emery, f.o.b. Pittsburg	"	.07
Acids—		
Boracic, crystals	"	.10¾@.11
Powdered	"	.11¼@.11⅝
Carbonic, liquid gas	"	.12½
Chromic, crude	"	.20
Hydrofluoric, 30%	"	.05
48%	"	.05
Best		.25
Sulphurous, liquid anhy.	"	.02
Alcohol—Grain	gal.	2.53
Refined wood, 95@97%	"	.60@.65
Purified	"	1.20@1.50
Alum—Lump	100 lbs.	1.75
Ground	"	1.85
Powdered	"	3.00
Chrome, com'l	"	2.75@3.00
Aluminum—		
Nitrate	lb.	1.50
Oxide, com'l, common	"	.03½
Best	"	.20
Pure	"	.86
Hydrated	100 lbs.	2.60
Sulphate, pure	"	1.50@2.00
Com'l	"	1.15@1.25
Ammonia—		
Aqua, 16°	lb.	.03
18°	"	.03¼
20°	"	.03¾
26°	"	.05½
Ammonium—		
Carbonate, lump		.08¼@.08½
Powdered	"	.09@.09¼
Muriate, grain	"	.05⅞
Lump	"	.08⅝
Nitrate, white, pure (99%)	"	.12
Phosphate, com'l	"	.09
Chem., pure	"	.00
Antimony—Glass	"	.30@.40
Needle, lump	"	.05½@.06
Powdered, ordinary	"	.05¾
Best	"	.08½
Oxide, com'l white, 95%	"	.09¼
Com'l white, 98%	"	.12
Com'l gray	"	.07
Sulphuret com'l	"	.16
Arsenic—White	"	.03½@.03⅝
Red	"	.07@.07¼
Asphaltum—		
Ventura, Cal.	sh. ton	32.00
Cuban	lb.	.01½@.03½
Egyptian, crude	"	.05½@.06
Trinidad, refined	sh. ton	35.00
San Valentino (Italian)	lg. ton	16.00
Seyssel (French), mastic	sh. ton	21.00
Gilsonite, Utah, ordinary	lb.	.03
Select	"	.03¾
Barium—		
Carb. Lump, 80@90%	sh. ton	25.00@27.50
92@98%	"	26.00@29.00
Powdered, 80@90%	lb.	.01¾@.02
Chloride, com'l	100 lbs.	1.67½@1.76
Chem. pure cryst	lb.	.05
Nitrate, powdered	"	.05½

Barium -	Cust. Meas.	Price
Oxide, com'l, hyd. cryst.	lb.	$0.18
Hydrated pure cryst.	"	.25
Pure powd.	"	.27
Sulphate (Blanc Fixe)	"	.02
Barytes—		
Am. Crude, No. 1	sh. ton	9.00
Crude, No. 2	"	8.00
Crude, No. 3	"	7.75
German, gray	"	14.50
Snow white	"	17.00
Bauxite—Ga. or Ala. mines:		
First grade	lg. ton	5.50
Second grade	"	4.75
Bismuth—Subnitrate	lb.	1.40
Subcarbonate	"	1.65
Bitumen—"B"	"	.03½
"A"	"	.05
Bone Ash	"	.02¼@.02½
Borax	"	.07¼@.07½
Bromine	"	.40
Cadmium—Metallic	"	1.40
Sulphate	100 lbs.	2.00@2.50
Calcium—Acetate, gray	"	1.25
" brown	"	.85
Carbide, ton lots f.o.b. Niagara Falls, N. Y., or Jersey City, N. J.	sh. ton	75.00
Carbonate, ppt.	lb.	.05
Chloride, com'l	100 lbs.	.75@.80
Best	"	1.00
Cement—		
Portland, Am., 400 lbs.	bbl.	1.70@2.00
Foreign	"	1.65@2.25
"Rosendale," 300 lbs.	"	.95
Slag cement, imported	"	1.65
Ceresine—		
Orange and Yellow	lb.	.12
White	"	.13½
Chalk—Lump, bulk	sh. ton	2.45
P. per quality	lb.	.03¾@.06
Chlorine—Liquid	"	.30
Wate	"	.10
Chrome Ore—		
(50% ch.) ex-ship N. Y.	lg. ton	24.75
Sand, f.o.b. Baltimore	"	33.00
Bricks, f.o.b. Pittsburg	M	175.00
Clay, China—Am. com., ex-dock, N. Y.	lg. ton	8.00
Am. best, ex-dock, N. Y.	"	9.00
English, common	"	12.00
Best grade	"	17.00
Fire Clay, ordinary	sh. ton	4.25
Best	"	6.00
Slip Clay	"	5.00
Coal Tar Pitch	gal.	.08
Cobalt—Carbonate	lb.	1.75
Nitrate	"	1.50
Oxide—Black	"	2.26@2.30
Gray	"	2.28@2.40
Smalt, blue ordinary	"	.06
Best	"	.20
Copperas	100 lbs.	.30@.35
Copper—Carbonate	lb.	.18
Chloride	"	.25
Nitrate, crystals	"	.35
Oxide, com'l	"	.19
Cryolite	"	.06½
Explosives—		
Blasting powder, A	25 lb. keg	2.65
Blasting powder, B	"	1.40
"Rackarock," A	lb.	.25
"Rackarock," B	"	.18
Judson R. R. powder	"	.10
Dynamite (20% nitro-glycerine)	"	.13
(30% nitro-glycerine)	"	.14
(40% nitro-glycerine)	"	.15
(50% nitro-glycerine)	"	.16½
(60% nitro-glycerine)	"	.18
(75% nitro-glycerine)	"	.21
Glycerine for nitro (32 2-10° Be.)	"	.13@.13¼
Feldspar—Ground	sh. ton	8.00@9.00
Flint Pebbles—Danish, Best.	lg. ton	14.75
French, Best	"	11.75
Fluorspar—		
Am. lump, 1st grade	sh. ton	$14.40
2d grade	"	13.90
Gravel and crushed, 1st gr.	"	13.40
2d grade	"	12.40
Ground, 1st grade	"	17.90
2d grade	"	16.50
Foreign, lump	"	8.00@12.00
Ground	"	11.50@14.00
Fuller's Earth—Lump	100 lbs.	.75
Powdered	"	.85
Refined lump	"	1.25

Graphite—Am. f.o.b. Providence, R. I., lump	Cust. Meas. sh. ton	Price 8.00
Pulverized	"	30.00
German, som. pulv.	lb.	.01¼@.01½
Best pulverized	"	.01½@.02
Ceylon, common pulv.	"	.02¾@.03½
Best pulverized	"	.04@.08
Italian, pulv.	"	.01¼
Gypsum—Ground	sh. ton	8.00@8.50
Fertilizer	"	7.00
Rock	lg. ton	4.00
English and French	"	14.00@16.00
Infusorial Earth—Ground.		
American, best	"	20.00
French	"	37.50
German	"	40.00
Iodine—Crude	100 lbs.	2.45
Iron—Muriate	lb.	.05
Nitrate, com'l	"	.01¼
True	"	.04
Oxide, pure copperas col.	"	.05@.10
Purple-brown	"	.02
Venetian red	"	.01@.01½
Scale	"	.01@03
Kaolin—(See Clay. China.)		
Kryolith—(See Cryolite.)		
Lead—Acetate, white	"	.07¾@.08
Brown	"	.05
Nitrate, com'l	"	.06½
" gran	"	.08¼
Lime—Com., abt. 250 lbs.	bbl.	.80
Finishing	"	.90
Magnesite—Greece.		
Crude (95%)	lg. ton	6.50@7.00
Calcined	sh. ton	14.00@15.00
Bricks	M	170.00
Am. Bricks, f.o.b. Pittsburg	"	175.00
Magnesium—		
Carbonate, light, fine pd.	lb.	.04½
Blocks	"	.06@.07
Chloride, com'l	"	.01¾
Fused	"	.20
Nitrate	"	.60
Sulphate	100 lbs.	.75@.95
Manganese—Powdered, 70@75% binoxide	lb.	.01¼@.01½
Crude, pow'd. 75@85% binoxide	"	.01½@.02¼
85@90% binoxide	"	.02¼@.03¼
90@95% binoxide	"	.03¼@.05½
Carbonate	"	.16@.20
Chloride	"	.04
Ore, 50%, Foreign	unit	.23@.24
Domestic	"	.30
Marble—Flour	sh. ton	6.00@7.00
Mercury—Bichloride	lb.	.77
Mica—N. Y. gr'nd, coarse	"	.03@.04
Fine	"	.04@.05
Sheets, N. C., 2x4 in.	"	.30
3x3 in.	"	.80
3x4 in.	"	1.50
4x4 in.	"	2.00
6x6 in.	"	3.00
Mineral Wool—		
Slag, ordinary	sh. ton	19.00
Selected	"	25.00
Rock, ordinary	"	32.00
Selected	"	40.00
Nickel—Oxide, No. 1	lb.	1.00
No. 2	"	.60
Sulphate	"	.20@.21
Oils—Black, reduced 29 gr.:		
25@30, cold test	gal.	.09¾@.10¼
15, cold test	"	.10¾@.11¼
Zero	"	.11¾@.12¾
Summer	"	.09¼@.09¾
Cylinder, dark steam ref.	"	.08¾@.10¾
Dark, filtered	"	.11¼@.15¾
Light filtered	"	.14¾@.17¾
Extra cold test	"	.21¾@.26¾
Gasoline, 86°@90°	"	.14@.19
Naphtha, crude, 68°@72°	bbl.	9.05
"Stove"	gal.	.12
Linseed, domestic raw	"	.53@.55
Boiled	"	.57
Calcutta, raw	"	.85
Ozokerite	lb.	.11½
Paints and Colors—		
Chrome green, common	"	.05
Pure	"	.16
Yellow, common	"	.10¼
Best	"	.25
Lampblack, com'l	"	.04½
Refined	"	.07
Litharge, Am. powd.	"	.04½@.05¼
English flake	"	.08½
Glassmakers'	"	.07¾@.08¼

	Cust. Meas.	Price
Metallic, brown	sh. ton	19.00
Red	"	16.00
Ocher, Am. common	"	9.25@10.00
Best	"	21.25@25.00
Dutch, washed	lb.	.03¾
French, washed	"	.01½@.02
Orange mineral, Am.	"	.08@.08¾
Foreign, as to make	"	.08¾@.11¼
Paris green, pure, bulk	"	.12½
Red lead, American	"	.05½
Foreign	"	.07½@.08¾
Turpentine, spirits	gal.	.37¾
White lead, Am., dry	lb.	.04½@.04¾
American, in oil	"	.05¾
Foreign, in oil	"	.07½@.09¼
Zinc, white, Am., ex dry	lb.	.04⅜@.04¾
American, red seal	"	.06¼
Green seal	"	.07
Foreign, red seal, dry	"	.05¼@.06
Green seal, dry	"	.06¾@.09
Potash—		
Caustic, ordinary	"	.04¾@.06
Elect. (90%)	"	.06¼
Potassium—		
Bicarbonate cryst.	"	.08¼
Powdered or gran.	"	.14
Bichromate, Am.	"	.08¼
Scotch	"	.08¼@.09
Carbonate, hydrated	"	.04@.04½
Calcined	"	.03½@.03¾
Chromate	"	.35
Cyanide (98@99%)	"	.24@.25
Kainit	lg. ton	9.05
Manure salt, 20%	100 lbs.	.66
Double Manure salt, 48@53%	"	1.12
Muriate, 80@85%	"	1.83
95%	"	1.86
Permanganate, pure cr.	lb.	.12¼@.12¾
Prussiate, yellow	"	.13½
Red	"	.37@.37¼
Sulphate, 90%	100 lbs.	2.11
96%	"	2.14
Sylvinit	unit	.36½
Quartz—(See Silica).		
Salt—N. Y. com. fine	sh. ton	2.00
N. Y. agricultural	"	1.50
Saltpetre—Crude	100 lbs.	3.40@3.45
Refined	"	4.25
Silica—Best foreign	lg. ton	10.00@11.00
Ground quartz, ord.	sh. ton	6.00@8.00
Best	"	12.00@13.00
Lump quartz	"	2.50@4.00
Glass sand	"	2.75
Silver—Chloride	oz.	.65
Nitrate	"	39¼
Oxide	"	85.@1.10
Sodium—		
Bichromate	lb.	.06¼
Chlorate, com'l	"	.08¼@.08¾
Hyposulphite, Am.	100 lbs.	1.60@1.65
German	"	1.70@1.80
Peroxide	lb.	.45
Phosphate	"	.02½
Prussiate	"	.10¼
Silicate, conc.	"	.05
Com'l	"	.01
Sulphate, com'l	100 lb.	.77½
Sulphide	lb.	.01¼
Sulphite crystals	"	.02½
Sulphur—Roll	100 lbs.	1.85
Flour	"	1.90
Flowers, sublimed	"	2.15
Talc—N. C., 1st grade	sh. ton	15.75
N. Y., Fibrous, best	"	10.20
French, best	100 lbs.	1.25
Italian, best	"	1.00@1¼
Tar—Regular	bbl.	1.90
Oil barrels	"	3.80
Tin—Crystals	lb.	.20@.21¼
Oxide	"	.42
Uranium—Oxide	"	2.25@3.00
Zinc—Metallic, ch. pure	"	.07@.07½
Carbonate	"	.15
Chloride	"	.05
Dust	"	.05½@.05¾
Sulphate	"	.02½@.03¼

THE RARE EARTHS.

	Cust. Meas.	Price
Boron—Nitrate	lb.	$1.50
Calcium—Tungstate (Scheelite)	"	.60
Cerium—Nitrate	"	11.00
Didymium—Nitrate	"	35.00
Erbium—Nitrate	"	40.00
Glucinum—Nitrate	"	20.00
Lanthanum—Nitrate	"	30.00
Lithium—Nitrate	oz.	.60
Strontium—Nitrate	lb.	06⅞@07
Thorium—Nitrate 49@50%	"	5.00
Uranium—Nitrate	oz.	.25
Yttrium—Nitrate	lb.	40.00
Zirconium—Nitrate	"	8.00

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Reviews.